Molecular Computer

n/STAR

System Administrator's Guide

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Molecular Computer
251 River Oaks Parkway
San Jose, California 95134

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Chapter 1. System Administrator Roles and Responsibilities

You may already be a system administrator, system manager, MIS manager, or other computer professional who controls your company's or your department's computer system(s). If so, the information in this section will be a review for you. However, in many cases, one office worker is given the additional responsibility of managing the Molecular system for that office. If this describes your function, carefully read this chapter and make sure you understand all that is involved.

1.1 Introduction to System Administration

Ideally, one person should be responsible for system administration. As a system administrator you have many roles and responsibilities. Perhaps the most important of these is keeping records of how the system is configured, how terminal and printer switches are set, where supplies can be ordered, and so forth. Then, if for some reason you are not available for an extended period of time, others can resume the system administration function with the least amount of difficulty.

Other system administrator functions you must provide are:

- Understanding hardware and software operation
- Controlling access to the system and making sure it is secure
- Explaining how to use the system to new users
- Explaining how to use new features as options are added
- Keeping an adequate supply of printer paper and ribbons, diskettes, tape cartridges, and so forth
- Providing new users with terminals (and perhaps printers)
- Backing up the system on a regular basis
- Understanding and correcting problems when they occur

You may not be required to do all of this work yourself, but you are the one responsible for making sure it gets done. System administration is a big responsibility.

As you will see as you read the chapters in this part of the manual, the system administrator needs to know about many things. It is a job of continual learning and expanding, and can be a very rewarding position to hold.

1.2 Understanding System Operation

As a system administrator, you are a teacher. But before you can teach you must first understand. This section explains the principal concepts of n/STAR and the computer on which n/STAR runs. Once you understand these things, you will be better able to perform your other system administrator tasks. Make sure all your users understand how to use n/STAR to its fullest extent, so that they can accomplish their work using all the benefits that the system provides.

1.2.1 n/STAR Fundamentals

n/STAR is the operating system that allows a Molecular Computer to operate. An operating system is a set of computer programs that take care of many "small" but difficult tasks, such as sending characters to terminals and printers, accepting characters from terminals, controlling disk reading and writing, and so forth. You could say that the operating system is a device which brings a computer and its application software together in a way that makes the entire system easy to use (that is, easier to use than would otherwise be possible).

n/STAR is a multiuser operating system; that is, it allows one computer system to serve the needs of multiple users. It does this by providing a Security System and a set of commands to control the computer with regard to multiple users.

The Security System is based upon a scheme of Users, Volumes, Logical Drives and Logical Assignments. Let's examine these one at a time. (This is a brief explanation -- more information may be found in the other manuals listed in Appendix A.)

Users

n/STAR lets you establish as many User IDs as you want. There is no practical limit to the number of Users you can define; however, the number of users who can log on at a given time is determined by the system configuration.

A User ID can be up to eight characters in length. Each User ID has an associated User Profile that is used to define such things as User Password, List Device (printer), Volume assignments, and an Initial Command.

One thing you should know when setting up your system is that the more users you define, the longer it takes for each user to log on (this is only a problem when you have upwards of 100 users defined, and is caused by the system searching for a match).

Volumes

A Volume is an area on the hard disk that is set aside for use by a particular set of programs and/or files. The number of volumes you can have depends upon the type of system you are using and its configuration. (Refer to the Supermicro Series, Supermicro X Series, or Molecular Series 9 Installation Manual for information on how to install your system and configure its hard disk drive(s).)

When you define a Volume, you give it a name of up to eight characters. Each Volume has a Volume Profile that is used to define such things as Volume location, Read and Write Passwords, and Secured/Unsecured Mode. Each Volume must exist in a separate area on the hard disk. Areas are are already established based upon a system of User Numbers and Logical Drives (more about these in a moment).

Access to the system is controlled by assigning Volumes to a User ID's Logical Assignments (also called work areas) in the User Profile (more about logical assignments later.)

Logical Drives

Your system has at least one hard disk drive, and may have more. You could call each disk drive a "physical" disk drive, because it is a tangible piece of computer hardware.

Each physical disk drive is divided into several Logical Drives. They are called "logical" drives because they are simply logical divisions of the physical drive; that is, they do not exist as separate pieces of computer hardware. (Note that some discussions of Molecular computer systems may use the term Partition to describe Logical Drives; the two names are equivalent.)

The number of Logical Drives available on your system depends upon the type of system and the configuration selected when it was installed. For example, a Supermicro 8 system with the standard (factory installed disk configuration and one physical disk drive has two Logical Drives. A Supermicro 32X with one physical disk drive and the standard configuration has eight Logical Drives.

The Logical Drives are designated by a letter. This letter is NOT EQUIVALENT to the work area designation used in n/STAR. Do not confuse the two. The Supermicro 8 just mentioned has Logical Drives A and B. The Supermicro Series 9 with a three 20 megabyte hard disks may use Logical Drives A, B, D, E, F, and I.

The diskette drive is a special case. There are four Logical Drive letters reserved for accessing the diskette drive: G, H, O, and P. n/STAR automatically knows that when you specify a work area to which is assigned a Volume which resides on one of these Logical Drives, you want to access the diskette and not the hard disk. The system is "fooled" into writing onto the diskette instead of the hard disk.

Each of these four Logical Drives is reserved for a different diskette format, depending upon system type. The formats supported vary according to whether you are using 8" or 5-1/4" diskettes and on the type of diskette drive in your system. Refer to the applicable Operator's Guide to learn the formats supported and how to use the diskette drive to read and write the various formats.

Each Logical Drive has 16 User Numbers (0 through 15). A Volume may be assigned to each of the User Numbers in each Logical Drive so, for example, the Supermicro 8 in our previous discussion can have a maximum of 32 Volumes. A Molecular Series 9 could be configured to have only one 20 megabyte partition, in which case only 16 Volumes could be created. (Actually only 14 Volumes could be created in a single-drive system, because the system requires two dedicated Volumes.)

Work Areas

As already mentioned, each User ID has a User Profile. Within this User Profile are work areas (also called Logical Assignments in some descriptions) to which any 16 of the existing Volumes may be assigned. The Logical Assignments for a given user are simply a map that tells the system where to find a given Volume.

Assigning a Volume to a User ID's work area does not actually move the Volume, it merely establishes a means for the system to relate the work area to the physical location of the Volume on the hard disk. Therefore, assigning the same Volume to two or more users takes no more disk space than assigning the Volume to no one. The Volume continues to exist in only one place on the hard disk.

n/STAR work areas have letter designations from A: through P:. These correspond to the letter you see as part of your n/STAR prompt. When the prompt looks like this:

```
A>
```

you are "in" the Volume assigned to your A: work area. When your prompt looks like this:

```
G>
```

you are accessing files in the Volume assigned to your G: work area. If you try to access a work area to which no Volume is assigned, or to which an illegal Volume is assigned (for example, a Volume which has a write password, but for which you did not assign the password when assigning the Volume), an error message displays:

```
~
|
|Bdos Error On n: Select
|Function 14
|
~
```

1.2.2 Volumes Already on the Hard Disk

Your system comes with several Volumes already set up. SYSTEM is on Logical Drive A, User Number 0 (A-0) and contains most of the n/STAR files and utilities necessary to make the system run. MAINT is at A-15 and contains all the lists of User IDs, Volumes, and other system parameters. FLOPPY is at G-0 and is used to operate the diskette drive in single-sided/single-density mode. Depending on your system type, other Volumes may exist in Logical Drives H, O, and P. Their purpose is to provide other diskette formats, when they are supported by the drive and by n/STAR.

Other Volumes supplied on the system are for use with ATOM, Molecular's menu-based system of word processing, electronic mail, and spreadsheet. These Volumes are:

ATOM
MMAIL
NEWMAIL

and they exist to make ATOM installation easier. If you have not purchased ATOM and have no intentions of doing so in the future, you can delete these Volumes. (If you change your mind later, the ATOM documentation explains how to set up the Volumes again.)

n/STAR requires that every user have a valid Volume assigned to their A: work area. If no volume is assigned to a User's A: work area, and that User logs on, the Bdos error (above) will display and the user will not be able to do anything. The user is locked out of n/STAR. To fix this problem, the system administrator must log on as another user, then use the MAINT utility to modify the User Profile and assign a valid Volume to the User's A: work area.

Molecular also recommends that you use the following conventions when making Volume assignments:

A:= any valid Volume
B: through N:= any valid Volume or no Volume at all
O:= SYSTEM or USERSYS (depending upon how your system was installed)
P:= desired diskette Volume (FLOPPY or FLOPPY 9S, for example)

Whether to use SYSTEM or USERSYS depends upon the experience level of your users. As described in the applicable installation manual, the system comes with the SYSTEM Volume, which contains a set of commands of which some can be dangerous in the wrong hands. When installing the system, the recommended procedure was to create a Volume called USERSYS and copy to it only those commands that user absolutely need to perform their work. It is up to you to decided the level of your users and assign the appropriate Volume.

Assinging SYSTEM (or USERSYS) to the O: work area takes advantage of the n/STAR directory search feature. Since most of the command files you use are located in the SYSTEM Volume, you can access any of these (provided their SYS attribute is set) from any of the lower-letter Volumes (A: through N:) without regard for where the command files actually reside. This directory search feature is explained in detail in the n/STAR User's Guide.

Finally, you should normally assign one of the diskette Volumes to the P: work area. This prevents the system from trying to search on the diskette when performing a directory search operations.

1.3 Restricting Access to Certain Features

It is a good idea to restrict access to certain n/STAR features which can get users into trouble. Some of n/STAR's features can compromise system security in the wrong hands. Other features, if used improperly, can create an annoyance for the system administrator.

The commands which can, if used improperly, compromise system security are:

MAINT
ASSIGN
DOWN
RESET
SET
WHO
VOLS

Whether or not you give users access to these commands will depend upon the skill and knowledge of your system's users and the potential damage that could be caused in your particular system.

To restrict access to certain n/STAR functions, create a Volume called USERSYS (assigned to any available Logical Drive/User Number) and copy into it only those commands to which your users should have access. Then, assign USERSYS to each User's O: Logical Assignment instead of SYSTEM. Refer to the Installation Manual for your system to learn more about setting up the n/STAR Security System.

1.4 Making Decisions about System Security

Closely related to the subject of restricting access is the entire subject of system security. n/STAR provides several levels of security by password protection. The methods by which you establish security will be covered in later chapters.

1.4.1 System Password

Most important of all is the System Password. n/STAR comes without a System Password, so that the first user can bring up the system and begin creating User IDs and Volumes. Once the n/STAR Security System is set up, and before any other users log on, you should establish a System Password.

The System Password must be correctly entered to gain access to the MAINT utility, which is used to create and delete Volumes and User IDs. If a user either purposefully or accidentally gets into the MAINT program, all data and programs on the system could easily be destroyed. Therefore, choose the MAINT password carefully, and entrust it only to those who have a need to know. (At least one other person in your organization should know the MAINT password, in case you become unavailable for an extended period of time.)

1.4.2 User Passwords

You can establish passwords for each User ID, if desired. If your users or others in your company are likely to attempt unauthorized use of your system, you should assign a User Password to each user. Then, inform each user not to give his or her password to any other person, and to log off when not in the vicinity of the terminal.

1.4.3 Volume Passwords

Once users log on, they can access any Volume whose name they know. To prevent unauthorized use of the contents of a Volume, you can establish a pair of Volume Passwords: a Read Password and a Write Password.

By giving a Volume a Write Password, you prevent those who don't know the password from either reading or writing (that is, looking at, modifying, or erasing the contents of the Volume).

By supplying a Read Password, you prevent those who need to look at the contents of a Volume from modifying or erasing anything.

Note that a Read Password is meaningless without a Write Password because, although those who know the Read Password can only read the contents of the Volume, those with no password can read or write. The converse is not true: the contents of a Volume are protected from change or erasure by a Write Password, while users without the password can only read the contents.

Assign Write and/or Read Passwords to Volumes which contain confidential information, and to Volumes which should not be used by unauthorized personnel. (For example, if you create a Volume called USERSYS as previously described, you may want to establish Read and Write Passwords for the SYSTEM Volume, so that users cannot change their assignment back to SYSTEM without the correct password.)

1.4.4 Initial Command

If your system's users do not have computer backgrounds and only want to use one type of application (word processing, for example), you may want to establish an initial command. When a user is set up in this way, a session with the application program is initiated as soon as the user logs on. Once in the application, however, the user can exit if a need arises to use another function. Unless the application is specifically designed to log off the user upon exiting, the user is not "trapped" inside the application program.

1.5 Keeping a System Log

One of the important responsibilities of a system administrator is keeping a system log. This log will provide a list of Users, Volumes, dates of hardware and software installations, dates and times of system backup, and descriptions of and solutions to problems.

A system log will help you when you want to backup your system, when you want to add new software programs or new users, and will provide invaluable information when your system needs to be serviced.

1.6 Ordering and Stocking Supplies

A very important part of your responsibilities as system administrator is to keep an adequate supply of consumables on hand at all times. You will realize just how important this is the first time you run out of printer ribbons while the Vice President is waiting for a report. This section describes the supplies you will need to keep your system running.

As you gain experience with supply requirements, you should establish minimum quantities for each item. Then, when supplies fall below that level, reorder a quantity adjusted to meet your changing needs.

1.6.1 Diskettes

Users will at least occasionally want to archive their data files onto diskettes. In addition, if your system does not have the optional tape backup unit, you will need diskettes to perform periodic backup.

Diskettes must be formatted before they are used the first time. The system can format diskettes; however, you can buy diskettes that are already formatted and tested for use on your particular type of system. Due to the time it takes to format diskettes (the system must be shut down to format), it is probably more cost-effective to buy diskettes that are already formatted.

The diskettes you need depend upon the type of diskette drive in your system and the mode in which you want to use it. Some Molecular systems use 8" diskette in various formats, while others use 5-1/4" diskettes.

Some of the 8" diskette drives are single-sided drives; they only store and read data on one side of a diskette. Other drives are double-sided; they can store and read data on both sides of a diskette.

If your system uses 8" diskettes, the single-density format is known as IBM 3740-compatible. The double-density format is known as IBM 3471-compatible. Most application software comes in single-sided/single-density format, because this type of diskette can be read by any system with an eight-inch diskette drive.

If your system uses 5-1/4" diskettes, they are double-sided/double-density diskettes with 9 sectors.

Be sure to order the correct diskette for your application.

You can buy diskettes that are completely blank, or that are already formatted as desired. To review, any system with 8" diskettes can use diskettes that are

- 8" single-sided/single-density (SS/SD)
- 8" single-side/double-density (SS/DD)

Some systems with 8" diskettes can also use diskettes that are

- 8" double-sided/single-density (DD/SD)
- 8" double-sided/double-density (DS/DD)

Systems with 5-1/4" diskette drives use diskettes that are

- 5-1/4", 512-byte sectors, 9 sectors per track, double-sided/double-density (IBM System 34 format)

Molecular recommends that you use high-quality diskettes such as Dysan or Verbatim brands. Until you determine how many diskettes to keep on hand, we would suggest ordering at least 30.

1.6.2 Tape Cartridges

If your system has an optional tape backup unit, you will need to order tape cartridges. The tape backup unit uses the following type of cartridge:

- Scotch brand DC-300 XL (or equivalent)
- Data Electronics Inc. (DEI)

To ensure data integrity, Scotch brand tape cartridges must be qualified by either Archive or Wangtech to handle data at 10,000 bits per inch (BPI). DEI cartridges must be qualified by DEI to handle 10,000 BPI.

These cartridges will provide 20 megabytes of data storage on the horizontal (Archive) tape drive, and 45 megabytes of data storage on the vertical tape drive (as used in the Series 9). In streaming mode (if supported on your system) it will hold approximately 20 megabytes..

You can use your tape backup unit both for backing up the entire hard disk drive, and for archiving selected files, Volumes, or Logical Disks (Partitions). You can also use the tape backup unit for changing the entire operating environment of the computer, by completely substituting all volumes, users, programs, and data (however, this should only be done by administrators who are very familiar with n/STAR.

If you are only going to use your tape backup unit for backing up the hard disk, you will need at least three tape cartridges. You will need to have more tape cartridges on hand if you need to backup more than 20 megabytes at a time (the storage capacity of the Supermicro 32X with one hard disk drive is 60 megabytes), so order accordingly.

1.6.3 Printer Supplies

Here you will need to study the documentation that was supplied with your printer(s). Determine what kind of ribbons it uses, and whether or not it can accept different kinds of ribbons. Some letter-quality printers, for example, can use continuous-loop nylon ribbons that will last for thousands of pages, and they can also use carbon-film ribbons, which pass through only once and may only print 100 pages or so.

Estimate the number of pages that will be printed per month and order at least two times the number of ribbons for that amount of printing. As you learn more about the printing requirements of your users, you can better estimate the number of ribbons you will need for a given period of time.

Many printers have interchangeable print elements (daisy wheels, thimbles, or print head) that allow you to print various types of characters. You may want to keep a supply of various types on hand, depending upon your users' needs. As a minimum, keep at least one spare print element on hand for use in case the one in your printer breaks or wears out.

You will also need to order various types of paper for your printer, and perhaps special forms and mailing labels. Most printers have tractor-feed mechanisms that pull on holes in the edges of the paper. You can obtain almost any kind of paper with a tractor-feed carrier, as well as common "green-bar" computer paper. Some examples:

- Letter paper with a perforated tractor strip on each side
- Letterhead paper with perforated tractor strips
- Letterhead paper lightly glued to a a tractor-feed carrier sheet
- Custom-printed checks, invoices, receivers, statements, etc.
- Self-adhesive mailing labels
- Multi-part versions of any of the above

Some printers require special paper, or have other special requirements. These are generally the non-impact types such as thermal printers, ink-jet printers, and laser printers. Again, consult your printer documentation to determine its specific needs, then order accordingly.

1.6.4 Terminals and Cables

As system administrator, you will be called upon to install terminals for new users, and occasionally to replace a defective terminal for an existing user. Molecular computer systems can use any "dumb" or "intelligent" terminal with the following characteristics:

- EIA RS-232C asynchronous serial interface
- 8 data bits, 1 stop bit, no parity
- ASCII character set
- Full duplex, 9600 baud (or higher) operation
- Addressable cursor positioning
- 80 column width, minimum

Molecular recommends using the Molecular MT-100 terminal available from your Molecular dealer or distributor.

In addition to terminals, you will need terminal connection cables long enough to run from your computer to the terminal. (Although an RS-232C interface is guaranteed for distances of 250 feet, successful installations have been made with much longer cables under ideal conditions.)

The type of cable you need is:

- Shielded 3-wire data cable with shielded male type DB-25 connectors on both ends with pin 2 connected to pin 2, pin 3 to pin 3, and pin 7 to pin 7.

For more information on cables and installation requirements, read the Supermicro Series, Supermicro X Series, or Molecular Series 9 Installation Manual.

1.6.5 Manuals

A final word on supplies: users will come to you when they need to know about a particular aspect of the system. For this reason, you should have a supply of manuals on hand and set up a small lending library. A list of appropriate manuals is listed in the next section of this chapter, and a complete list of manuals available from your Molecular Computer Dealer is provided in Appendix A.

1.6.6 Where to Find Computer Supplies

If you are already a system administrator, you probably receive office supply and computer supply catalogs. If not, consult your Yellow Pages for computer supply companies in your area.

Your Molecular Dealer may carry a complete line of supplies for the system you purchased. Most computer supply companies, and many office supply houses, carry a full line of printer supplies, diskettes, tape cartridges, and terminal cables (both bulk cable and complete cable assemblies with connectors attached).

1.7 Supplies Checklist

Here is a check list of items to keep on hand (make as many copies as you need):

	Item	Quantity
__	Diskettes of the desired size and format(s)	_____
__	Qualified tape cartridges	_____
__	Printer paper	_____
__	Printer forms	_____
__	Printer ribbons	_____
__	Printer print elements	_____
__	Terminal cables	_____
__	Installation Manual for your system type	_____
__	Operator's Guide for your system type	_____
__	n/STAR User's Guide	_____
__	n/STAR Administrator's Guide	_____
__	n/STAR Programmer's Guide	_____
__	Tape Backup System User's Guide	_____
__	CP/M Manual	_____
__	Menu Master User's Manual	_____
__	Menu Master Reference Manual	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____
__	_____	_____

1.8 Summary

As a system administrator, you have many responsibilities including understanding the operation of the system, teaching others how to use the system, making sure the system's data and programs are secure and regularly backed up, and keeping a supply of consumables on hand for the system and its peripherals.

If you want to establish a system that is as secure as possible, you should assign each user a User Password, assign a System Password, and assign each Volume a Read Password and a Write Password. Finally, you should create a USERSYS Volume, assign it to each user's O: drive, and copy into it only those files necessary for the user's application.

Chapter 2. Changing the System Password

This chapter explains how to establish, change, and delete the n/STAR system password.

Before you can perform these functions, you must display the MAINT menu by entering

MAINT <RETURN>

If your system has a system password, the screen displays:

```
~
|Enter System Password: (         )
~
```

After entering the password, the screen displays the MAINT menu:

```
n/STAR System Maintenance Program


                Enter Function Code

          0)  Change the system password
          1)  User maintenance
          2)  Volume maintenance
          3)  Event log configuration
          4)  Get history log file
          8)  Print user and volume directories
          9)  System configuration

                      hit "RETURN" to exit (_)
```

CAUTION

Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

As mentioned in Chapter 1, your system comes with no system password. A system password should have been established when the system was installed.

To add, change, or delete a system password, follow these steps:

1. Make sure that the MAINT menu is displayed.

2. Press **0**. The screen displays

```
~
|
|Enter the NEW system password (_          )
|
~
```

3. Enter the desired password (up to eight characters), then press **<RETURN>**. To delete a password, simply press **<RETURN>**. The screen displays

```
~
|
|Again please (_          )
|
~
```

4. Repeat the entry. This ensures that you did not make a typographical error while entering the new password. If the two entries do not match, the screen displays

```
~
|Entries do not match.  The password was not changed.
|...Hit any key to continue _
|
~
```

If the above message does not display, the screen again displays the MAINT menu. This means that the password has been changed (or added, or deleted).

Chapter 3. Adding, Deleting, Changing Users

This chapter explains how to create, change, and delete the n/STAR Users.

Before you can perform these functions, you must display the MAINT menu by entering

MAINT <RETURN>

If your system has a system password, the screen displays:

```
~
|Enter System Password: (        )
~
```

After entering the password, the screen displays the MAINT menu:

```
n/STAR System Maintenance Program


                Enter Function Code

          0)  Change the system password
          1)  User maintenance
          2)  Volume maintenance
          3)  Event log configuration
          4)  Get history log file
          8)  Print user and volume directories
          9)  System configuration

                    hit "RETURN" to exit (_)
```

CAUTION

Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

When you elect to perform User maintenance, you first see a list of all defined Users, then have an opportunity to modify existing Users or add new Users.

After you select item number 1 from the MAINT menu, the screen displays a list of all the Users currently established on the Security System. Here is a typical display:

```
CURRENT USERS

GARY     LISA     REMOTE   DAVE     ERIC     409A     LISA1    STEVE
FRED     TOM      SALLY    JACK     ACCOUNT  CHARGES  TOM2     MANAGER

Enter a user ID (_       )
```

To change a User Profile, enter one of the User IDs on the screen, and press **<RETURN>**. (If the User ID is eight characters do not press RETURN.) To create a new User Profile, enter up to eight characters, and press **<RETURN>**. If you type the name of a User that does not yet exist, the screen momentarily displays

```
NEW USER
```

then it displays the User Profile screen. Here is a typical User Profile screen:

```
                              Profile of User JACK

PASSWORD      PW:=SNODGRAS

LOGICAL ASSIGNMENTS

A:=DOCUMENT;            I:=WSDEMO  ;MANAGER    LST:=SPOOL    MATRIX
B:=MBASIC  ;SECRET      J:=        ;
C:=        ;            K:=WORDPROC;TEMP
D:=        ;            L:=        ;
E:=        ;            M:=MILESTON;CHART
F:=CBASIC  ;            N:=SCRATCH ;
G:=GAMES   ;NOWORK      O:=SYSTEM  ;
H:=MLIB    ;            P:=FLOPPY  ;

INITIAL COMMAND       CMD:=WORDSTAR

MP/M MODE ON/OFF    MPM:=OFF

ENTER COMMAND OR "DEL" TO DELETE THIS USER

(_                                                    )
```

Once the User Profile screen displays, you may enter any of the commands described below. Press **<RETURN>** after each entry.

You may enter the commands described below. Press **<RETURN>** after each entry.

PW:=password

Changes the User Password. password may be up to eight characters.

d:=volume{;password}

Assigns a volume to a work area (d) and specifies a read password or a write password, if one is necessary. d may be any one of the work area letters shown on the User Profile screen. volume can be any acceptable Volume name; however, if volume has not been created by your system manager, a message displays indicating this fact. n/STAR goes ahead and assigns the Volume name you specify; however, if you try and access the work area to which the non-existent Volume is assigned, an error message displays.

password may be either the Volume's read password or write password. password may be omitted if no passwords are specified in the Volume Profile. If you supply the wrong password, n/STAR goes ahead and assigns the Volume to the specified work area; however, if you select that work area, an error message is displayed.

To remove or "unassign" a Volume from a work area, enter **d:=<RETURN>**.

LST:=printer

Specifies a list device for printing. printer may be one of the following entries:

SPOOL {queue name}
LOCAL
SYSTEM

LOCAL is the default. Refer to the n/STAR User's Guide for a description of various printing methods available.

CMD:=initial

Instructs n/STAR to call up a COM (command) file each time the User logs on. This is useful if you have only one type of activity to perform on the system. initial is the name of the COM file. For example, CMD:=WORDSTAR causes the program WORDSTAR.COM to execute automatically each time you log on. If this entry is left blank, you will automatically log on to the n/STAR operating system, User Drive A.

DEL

Use this command to delete a User Profile. Type the characters **DEL.** (This is not equivalent to pressing the DEL or RUBOUT key on your terminal keyboard.)

After each entry, press **<RETURN>**, and the screen displays an updated version of the User Profile. Press **<RETURN>** a second time to return to the MAINT Menu.

Chapter 4. Adding, Changing, Deleting Volumes

This chapter explains how to establish, change, and delete the n/STAR Volumes.

Before you can perform these functions, you must display the MAINT menu by entering

```
MAINT <RETURN>
```

If your system has a system password, the screen displays:

```
~
|Enter System Password: (        )
~
```

After entering the password, the screen displays the MAINT menu:

```
n/STAR System Maintenance Program

                Enter Function Code

          0)  Change the system password
          1)  User maintenance
          2)  Volume maintenance
          3)  Event log configuration
          4)  Get history log file
          8)  Print user and volume directories
          9)  System configuration

                hit "RETURN" to exit (_)
```

CAUTION

Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

Volume maintenance is much like User maintenance. You first see a list of all defined Volumes, then have an opportunity to modify existing Volumes or add new Volumes.

After you select item number 2 from the MAINT menu, the screen displays a list of all the Volumes currently established on the Security System. Here is a typical display:

```
|CURRENT VOLUMES
|
|SYSTEM  FLOPPY  FLOPPY1D FLOPPY2D VOL1     VOL2     MANAGER  TEST1
|TIM     GARY    LETTERS  WSDEMO   NEWS     DAVE2    SCRATCH  SCRVOL
|INVTR01 REPORTS DEMO     DAVE     GARY6    SUSAN    VOLSCR   MICRO
|PHILIP
|
|Enter a volume name (_       )
|
~
```

To change a Volume Profile, enter one of the Volume names on the screen, and press **<RETURN>** (If the Volume name is eight characters, do not press RETURN.) To create a new Volume Profile, enter up to eight characters, and press **<RETURN>**. If you enter a non-existent Volume name, the screen momentarily displays

```
~
|
|NEW VOLUME
|
~
```

and then displays the Volume Profile screen. Here is a typical Volume Profile screen:

```
                        Profile of volume SCRATCH


READ PASSWORD     RPW:=ROBERT

WRITE PASSWORD    WPW:=FROST

LOCATION           FP:=255

                  DRV:=B

                  USR:=8

ACCESS IS (SECURED OR UNSECURED) SECURED


Enter command or "DEL" to delete this volume

(_              )
```

You may now enter any of the commands described below. Press **<RETURN>** after each entry.

RPW:=password

Read password for the Volume. password may be up to eight characters.

WPW:=password

Specifies a write password for the Volume. password may be up to eight characters.

FP:=address

address is 255 for normal system installations. If your system includes the Molecular Model Interconnect (MMI), the File Processor address may be different. MMI is a method of connecting two or more Molecular computer systems so that they behave as one functional unit. In this case, enter the address of the File Processor which controls the hard disk on which the Volume resides (or on which you want the Volume to reside).

DRV:=x

Specifies the Logical Drive (Partition) letter on which the Volume is to exist, where x is a letter representing the desired Logical Drive. Refer to the applicable Installation Manual for information on the various Logical Drives available on your particular system and configuration.

USR:=n

Specifies the CP/M User Number under which the Volume is to reside. The CP/M User Numbers range from 0 to 15. Each Logical Drive available on your system can contain 16 Volumes. (Location A0 is reserved for the SYSTEM Volume supplied with your computer, and location A15 is reserved for the MAINT Volume which contains tables of users, volumes, and other system-related information. All other locations are available for your use as desired.)

SECURED

UNSECURED

Type the entire word SECURED or UNSECURED to select this parameter. SECURED Volumes take advantage of the n/STAR file locking system. UNSECURED Volumes must be used for certain applications which do not close files properly (to avoid a "Lock Table Full" error). For a complete description of how SECURED and UNSECURED work, refer to the n/STAR User's Guide, Chapter 2. SECURED is the default parameter.

DEL

Use this command to delete a Volume. Type the letters **DEL**. (This is not equivalent to pressing the DEL or RUBOUT key on your terminal keyboard.) The Volume will be deleted when you press **<RETURN>**. Any files that were in the Volume will remain on the hard disk until they are erased using the ERA command described in the n/STAR User's Guide. This means that deleting a Volume accidentally is not disasterous. You can once again access files that were in the Volume by creating a new Volume in the same location (DRV: and USR:).

After each entry in the Volume Profile, press **<RETURN>**. The screen then displays an updated version of the Volume Profile. Press **<RETURN>** a second time to return to the MAINT Menu.

n/STAR lets you assign two or more Volume names to the same Volume location. However, if you assign a Volume name to a logical-drive-CP/M-User-Number combination that already has an assigned Volume, n/STAR displays

```
~
|
|** WARNING **  Location in use ** vol:name
|... Hit any key to continue_
|
~
```

where name is the name of the Volume already assigned to that location. Press any key to return to the Volume Profile screen. The Volume with which you are working has now been assigned to the same logical drive and CP/M User Number as another Volume. In this situation, a User has access to all the files in all Volumes assigned to the same location. This situation is usually not desirable, because it allows Users to access files that are not in their assigned Volumes, thus bypassing the provisions of the Security System. To remedy this condition, simply reassign one of the Volumes in question to another logical drive and/or CP/M User Number, or delete the Volume.

Chapter 5. Modifying System Configurations

This chapter explains how to change the configuration of Application Processors (and of the File Processor) to support various functions.

Before you can perform these functions, you must display the MAINT menu by entering

```
MAINT <RETURN>
```

If your system has a system password, the screen displays:

```
~
|Enter System Password: (        )
~
```

After entering the password, the screen displays the MAINT menu:

```
|                    n/STAR System Maintenance Program
|
|
|                         Enter Function Code
|
|                  0)  Change the system password
|                  1)  User maintenance
|                  2)  Volume maintenance
|                  3)  Event log configuration
|                  4)  Get history log file
|                  8)  Print user and volume directories
|                  9)  System configuration
|
|                        hit "RETURN" to exit (_)
|
~
```

CAUTION

Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

A function you will need to perform from time to time is system configuration. By doing so, you establish the parameters of new Application Processors and change the parameters of existing Application Processors. These parameters let you establish such things as baud rates and communication protocols.

n/STAR already has default settings for 254 Application Processors. This means you can simply plug in a new Application Processor (as long as its m/BUS address is different from any other Application Processor in the system -- more on m/BUS addresses later) and in most cases it will work without doing anything.

However, if you want to change the baud rate of the Application Processor's terminal or printer port, or if you want to use the Application Processor for communications or for a despooling printer, you must use the System Configuration Menu to change a few things.

To display the System Configuration Menu, first display the MAINT menu, then select **9** (do not press RETURN). The screen displays

```
|                    n/STAR System Maintenance Program
|
|Enter a m/BUS unit address (_  )
|
~
```

To return to the MAINT Menu, press **<RETURN>** without entering an m/BUS address.

Each Application Processor in your system has a unique address, which should be on a label so that you can see it from the back of the computer, (after removing the rear cover, when applicable). Enter the address of the desired Application Processor. Here is a display showing the default values:

```
                    n/STAR System Maintenance Program

                          Configuration of unit 238

BAUD RATE FOR THE CONSOLE SERIAL PORT

C:=9600

BAUD RATE FOR THE PRINTER SERIAL PORT

P:=9600

INITIAL COMMAND

CMD:=LOGON

SYSTEM:=

RTS LOW ON PORT A CAUSES A REBOOT (YES OR NO) RTS:=NO

DTR LOW ON PORT A INHIBITS OUTPUT (YES OR NO) DTR:=NO

Enter command
```

To return to the m/BUS address entry screen, press **<RETURN>** without entering a command. You may enter any of the following commands to change the Application Processor parameters as desired. Press **<RETURN>** after each entry.

5.1 Setting Application Processor Baud Rates

This section explains the system configuration parameters:

C:=baud

and

P:=baud

The System Configuration Menu lets you enter values for baud rates to match your terminal and printer (or modem, if applicable). C:=baud sets the baud rate of the console (A) port of the Application Processor. P:=baud sets the baud rate of the printer (B) port. baud may be: 110, 150, 300, 1200, 2400, 4800, 9600, and 19200. The default is 9600.

Your terminal or printer must support the baud rate you select. After you enter a baud rate, change the physical baud rate setting on your terminal or printer.

The baud rate for the console or printer port may also be set using the SETBAUD command described in the n/STAR User's Guide.

5.2 Establishing an Initial Processor Command

CMD:=initial

This initial command lets you establish a start-up process for each Application Processor. Thereafter, when the processor is started (either by starting the system, logging on, or resetting the processor), the initial command is executed.

NOTE

The initial command in this MAINT utility is not the same as the initial command in a User Profile.

initial may be any of the following:

LOGON
NEWCON
DESPOOL

The following information describes each of these initial commands in detail:

5.2.1 Normal AP Configuration (LOGON)

Normally, you will want to have Application Processor initial commands set to their default values

CMD:=LOGON {username}

When the initial command is LOGON, the Security System is automatically invoked. The Application Processors on new systems have their initial commands set to LOGON. If you are examining or modifying a logged-on Application Processor, username appears after the word LOGON, indicating the User ID of the person currently logged on.

CAUTION

If LOGON is removed from the Application Processor initial command, the Security System is not automatically invoked. In this case, the user will operate in superuser mode. Superuser mode is much like running directly under CP/M. Users must access files by Logical Drive letter and CP/M User Number. The concept of Volumes, passwords, and User Profiles do not apply to users in superuser mode. **We strongly advise against allowing any of your users to operate in this mode.**

5.2.2 Making APs "TLINK-able" (NEWCON)

If you want to set up an Application Processor as a system resource, enter

CMD:=NEWCON {name}

When the initial command is NEWCON, the Application Processor can be used as a system resource processor using the TLINK command described in the n/STAR User's Guide. The optional name lets you specify a unique or nonunique name for the processor. If no name is supplied, the name "NSTAR80" is used. If you have more than one processor with the same name, TLINK simply acquires one of the processors with the specified name that is not currently acquired.

NEWCON only applies to standard Application Processors. The procedure for using 16-bit Application Processors is to remove the initial command entirely by typing **CMD:=<RETURN>**.

5.2.3 Setting Up APs for Despooling Printing (DESPOOL)

To use an Application Processor for despooling print jobs from the system spooler, enter

CMD:=DESPOOL (param1) (param2)

The DESPOOL command requires detailed discussion and examples, and therefore is covered in the next chapter.

5.3 Configuring 16-bit APs for Desired Operating System

You can use 16-bit Application Processors for running CP/M-86 applications using the NSTAR86.SYS system image without doing anything. If you have the optional Molecular MS-DOS Operating System implementation, you must enter

SYSTEM:=MSDOS.SYS

The SYSTEM parameter allows you to load a 16-bit Application Processor with the system image of another operating system. This parameter should be left blank for all standard (8-bit) Application Processors. If the parameter is left blank with a 16-bit Application Processor installed, NSTAR86.SYS will be loaded into the the unit's CPU when the processor is coldstarted.

If you have installed Molecular's optional MS-DOS operating system implementation, specify **SYSTEM:=MSDOS.SYS**. This will cause the MS-DOS system image to be loaded when the processor is coldstarted. For more information, refer to the documentation which comes with the Molecular MS-DOS option.

5.4 Setting AP Communication Options (RTS/DTR)

If you have users connected to the Molecular system via a modem, you may want to set

RTS:=YES

If you select RTS:=YES, the Application Processor performs a coldstart (equivalent to a BREAK) when Request-To-Send (RTS) on port A goes low. This causes the currently logged User to be logged off. This feature, if set, automatically logs off remote terminals when the User "hangs up" the modem. Normally, RTS is set to NO.

Also, if you have terminals with data overrun problems (in which data displayed or typed is arriving too fast for the terminal even though the baud rate is set correctly), you may want to set

DTR:=YES

If you select DTR:=YES, the Application Processor sends data to the terminal only when Data-Terminal-Ready (DTR) is high. This allows terminals with DTR capability to control the flow of characters to and from the computer. Normally, DTR is set to NO.

5.5 Changing File Processor Parameters

To change the parameters of the File Processor (to which a system printer connects), enter 255 as the m/BUS unit address. DO NOT CHANGE THE INITIAL COMMAND. It must be set to LOGON.

Chapter 6. Configuring Despooling Printers

This chapter explains how to set Application Processor parameters to establish despooling printers.

Before you can perform these functions, you must display the MAINT menu by entering

MAINT <RETURN>

If your system has a system password, the screen displays:

```
~
|Enter System Password: (        )
~
```

After entering the password, the screen displays the MAINT menu:

```
|                    n/STAR System Maintenance Program
|
|
|                         Enter Function Code
|
|                    0)  Change the system password
|                    1)  User maintenance
|                    2)  Volume maintenance
|                    3)  Event log configuration
|                    4)  Get history log file
|                    8)  Print user and volume directories
|                    9)  System configuration
|
|                              hit "RETURN" to exit (_)
|
~
```

CAUTION

> Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

To set up an Application Processor for despooling operation, you must enter

CMD:=DESPOOL (param1) (param2)

If you are setting up an Application Processor to be used as a despooler, the DESPOOL initial command uses param1 to describe the printer attached to port A (the console port), and param2 to describe the printer attached to port B (the printer port). param1 and param2 have the following form:

{'banner',{$SINGLE,}{$80,}} queue name {,rate{,protocol}}

6.1 Setting the Despooling Banner

The 'banner' is the optional text which, when present, describes the text to appear on the first of three lines on the banner page(s) and also when specified, turns on the banner printing function. The banner lines are printed in large letters made from a number of ordinary characters printed in a matrix pattern. The three banner lines fill an entire page.

When banner text is specified (in single quotes ['] as shown), a banner prints at the beginning of each print job despooled. The banner consists of three lines of text printed on one or two consecutive pages prior to printing the text of the job itself. The format is as follows:

Line 1 - banner text (specified in 'banner'; 12 characters max.)
Line 2 - Volume name
Line 3 - File name

If 'banner' is omitted from the parameter specification, no banner is printed; that is, lines two and three, as well as line one, are suppressed.

6.1.1 Setting Single/Double Page Banner

$SINGLE is an optional parameter which causes the banner (if specified) to be printed only once, on a single page. If $SINGLE is omitted, the banner prints twice, on two consecutive pages.

6.1.2 Setting 80/132 Column Banners

$80 is an optional parameter which causes the banner (if specified) to be truncated at the 80th column (for printing on letter-size paper). If $80 is omitted, the banner text is printed 132 columns wide. This parameter lets you set up the printer to avoid printing on the bare platen.

6.2 Establishing a Queue Name

queue name is the name you decide to use to reference the printer when assigning the printer in your User Profile and when using the n/STAR LIST command. queue name may be up to 8 characters long. If desired, multiple despooling printers may be assigned to the same queue name. In this case, printing is directed to the first printer available with the specified name.

You will usually want to give different types of printers different names. For example, a "letter-quality" printer may be named "LQP," while a dot-matrix printer may be named "MATRIX." In this way, you can direct your printed matter to the printer that suits your needs by specifying its name.

6.3 Establishing Despooling Baud Rate

rate is a decimal value from 0 to 7 defining the baud rate of the printer. Although you can specify rate in this command line, it is preferable to set the baud rate using the C:= and P:= entries at the top of System Configuration screen. The values for rate are:

0	110 baud
1	150 baud
2	300 baud
3	1200 baud
4	2400 baud
5	4800 baud
6	9600 baud
7	19200 baud

The default is the value set by the C:= and P:= commands

6.4 Setting the Despooling Protocol

protocol may be:

0 ETX/ACK protocol and a buffer-full position
1 DTR handshaking or XON/XOFF protocol

The default is 1 (DTR; XON/XOFF). If the printer is capable of both ETX/ACK and XON/XOFF protocols, XON/XOFF (selection number 1) is the preferred entry.

6.5 Examples of Despooling Configurations

Let's bring all of these parameters together in some examples.

First, let's say you have two printers connected to the same Application Processor. One is a letter-quality printer with a queuename of "CP", with default settings and no banners, and is connected to the A-port. The other is a dot matrix printer connected to the B-port, and has a single-page, 132 column banner, the first line of which is to read "ADMIN 1". The queue name of the printer is "LP". The initial command for this Applicqtion Processor would look like this:

```
CMD:=DESPOOL (CP) ('ADMIN 1',$SINGLE,LP)
```

For another example, let's say you want to set up two printers on one Application Processor. To the A-port is connected a dot matrix printer with a queue name of "DOT" which is to have standard, double-page banners of 132 column width. The banner text is to read "PRINTER 1", and although the A-port is configured for 9600 baud, ou want to set the baud rate in the parameter line to 1200 baud. In addition, this printer requires ETX/ACK protocol. The other printers is connected to the B-port and is to have the queue name "LQP". It is to have 80-column, single-page banners which read "PRINTER 2", and is to use the default rate and protocol. The CMD: line would look like this:

```
CMD:=DESPOOL ('PRINTER 1',DOT,3,0) ('PRINTER 2',$SINGLE,$80,LQP)
```

For one final example, let's say you want to set up a single printer with all default settings, and no banners. This printer is to be connected to the Application Processor's A-port. The queue name is to be "CP". The command line for this example would look like this:

```
CMD:=DESPOOL (CP)
```

As you can see from this last example, there is no need to specify parameters which are not used.

Chapter 7. Printing User and Volume Directories

This chapter explains how print User and Volume directories. It is a good idea to print directories whenever you add, change, or delete Volumes or Users, so that you have an up-to-date list of system configuration for reference and in case a problem arises.

Before you can perform these functions, you must display the MAINT menu by entering

MAINT <RETURN>

If your system has a system password, the screen displays:

```
~
|Enter System Password: (        )
~
```

After entering the password, the screen displays the MAINT menu:

```
|                    n/STAR System Maintenance Program
|
|
|                         Enter Function Code
|
|                  0)  Change the system password
|                  1)  User maintenance
|                  2)  Volume maintenance
|                  3)  Event log configuration
|                  4)  Get history log file
|                  8)  Print user and volume directories
|                  9)  System configuration
|
|                              hit "RETURN" to exit (_)
|
~
```

CAUTION

> Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

The User Profile Directory is a listing of all the User Profiles. The Volume Directory lists for each Volume: Volume name, File Processor address, Logical Drive letter, CP/M User Number, and the User IDs which have the Volume assigned to their work areas.

If you enter **8** with the MAINT menu displayed, the screen displays

```
~
|
|Enter USER or VOLUME (U/V): (_)
|
~
```

Enter either **U** or **V**. Do not press RETURN. Enter **U** to print the User Profiles. Enter **V** to print the Volume assignments.

If you enter U, the printer prints the User Profile Directory. If you enter V, the screen displays

```
~
|
|Sort by NAME or LOCATION? (N/L): ([])
|
~
```

Enter **N** to sort the Volume list by name. Enter **L** to sort the Volume list by location (Logical Drive and User Number). Do not press RETURN. The screen displays

```
~
|
|include user xref? (Y/N): (_)
|
~
```

Enter **Y** to include a cross reference of the Users which have each of the Volumes assigned to one of their work areas. Enter **N** if you do not want the Users included. The printer begins printing after your entry (or a spool file is created, after which you can print by entering **LIST <RETURN>**. Here is a typical Volume directory as it is printed by the system:

```
VOL:SYSTEM      FP: 255   DRV: A    USR: 00   (RW-)
VOL:INVNTRO1    FP: 255   DRV: A    USR: 04   (RW-)
VOL:LETTERS     FP: 255   DRV: A    USR: 07   (RWU)
VOL:VOL1        FP: 255   DRV: A    USR: 08   (RW-)
VOL:MAINT       FP: 255   DRV: A    USR: 15   (---)
VOL:NEWS        FP: 255   DRV: B    USR: 01   (-W-)
VOL:VOL2        FP: 255   DRV: B    USR: 08   (R--)
VOL:FLOPPY      FP: 255   DRV: G    USR: 00   (---)
```

The rightmost column of the Volume directory printout consists of three fields. Each field may have either an entry or a dash to indicate no entry. The entries for the fields are

```
 FIELD NO.
1   2   3

R   W   U
```

An R entry in the first field indicates that a read password is assigned to the Volume. A dash (-) indicates that no read password is assigned.

A W entry in the second field indicates that a write password is assigned to the Volume. A dash (-) indicates that no write password is assigned.

A U entry in the third field indicates that the Volume is UNSECURED. A dash (-) indicates that the Volume is SECURED.

When the directory finishes printing (or spooling), the screen returns to the MAINT menu.

Chapter 8. Using the System Event Log

This chapter explains how to use the system event log. The event log lets you keep track of when users log on an off and, optionally, which application programs they run.

Before you can perform these functions, you must display the MAINT menu by entering

```
MAINT <RETURN>
```

If your system has a system password, the screen displays:

```
~
|Enter System Password: (        )
~
```

After entering the password, the screen displays the MAINT menu:

```
n/STAR System Maintenance Program


                Enter Function Code

          0)  Change the system password
          1)  User maintenance
          2)  Volume maintenance
          3)  Event log configuration
          4)  Get history log file
          8)  Print user and volume directories
          9)  System configuration

                    hit "RETURN" to exit (_)
```

CAUTION

Do not attempt to run MAINT while you are in Diagnostic Mode. Only run MAINT from Multiuser Mode. (There are no such things as Users and Volumes when you are in Diagnostic Mode.)

8.1 Establishing Event Log Parameters

Before you can use the system event log, you must establish event log parameters. To do this, first display the MAINT menu, the press 3. The screen displays

```
|                    n/STAR System Maintenance Program
|
|                          Event log parameters
|
|SWITCH:=0
|        0 - no event logging
|        1 - log user logon and logoff
|        2 - log program execution
|
|MAX:=0
|     0 - no limit on the size of the event log
|     NONZERO - maximum file size for the event log
|               (value must be less than 65535)
|
|Enter command (_           )
|
~
```

NOTE

The event log keeps track of significant system events by recording the date and time at which they occur. For the log to be accurate, the system clock must be accurately set. To learn how to set the system clock, refer to the n/STAR User's Guide.

The system event log parameter screen lets you specify the maximum size of the log as well as the events that are recorded in the Event Log. You may enter any of the commands described below. Press **<RETURN>** after each entry.

SWITCH:=n

Selects the events to be entered in the log. The values of n may be:

0	No event logging.
1	Include User LOGON and LOGOFF information.
2	Include User LOGON, LOGOFF, and program execution information.

0 is the default.

MAX:=n

Specifies the maximum number of 128-byte records that the system event file may include. n must be less than 65,535. If you enter 0, the the size of the system event file is unlimited.

8.2 Get Event Log File

Selecting 4 from the MAINT menu causes n/STAR to read the event log file from the Volume MAINT and write a formatted file to the Volume assigned to the current User Drive. The screen briefly displays

```
~
|
|Processing the system event log file
|
~
```

and then returns you to the MAINT menu. MAINT creates a file called HISTORY.SYS in your logged User Drive. If a file named HISTORY.SYS already exists in your current User Drive (from a previous GET operation), this operation appends new events onto the end of that file. If no HISTORY.SYS file exists, the file is created and the information from the event log is transferred.

The GET operation deletes all event information previously logged by the event log function. Therefore if you enter 4 again before anyone causes an "event" to occur, the screen displays

```
~
|
|NO HISTORY FILE
|
~
```

8.3 Displaying the History Log File

You may now print and/or display the contents of the HISTORY.SYS file using ordinary n/STAR commands. A following typical display was obtained by exiting from MAINT and entering

```
A>TYPE HISTORY.SYS <RETURN>
```

```
"CCPRESTART","DAVE",245,2375,9,26,20
"LOGON","DAVE",245,2375,9,26,38
"LOGON","GARY",221,2375,9,30,0
"MBASIC","DAVE",245,2375,9,30,55
"WS","GARY",221,2375,9,35,43
"LOGON","SUSAN",246,2375,9,45,23
"SCALC","SUSAN",246,2375,9,45,55
"LOGOFF","DAVE",245,2375,9,50,21
"MBASIC","GARY",221,2375,13,21,0
"LOGOFF","GARY",221,2375,15,20,34
"WS","SUSAN",246,2375,16,5,7
"LOGOFF","SUSAN",246,2376,1,2,59
```

Each logical record within the file HISTORY.SYS has the following format:

"type","user",unit,date,hh,mm,ss

where

type	is LOGON, LOGOFF, CCPRESTART, or d:filename.typ
user	is the User ID
unit	the decimal m/BUS address of the Application Processor making the entry
date	is a decimal number indicating the number of elapsed days since January 1, 1978 (day 1).
hh,mm,ss	is the time the entry was made, in decimal. hh may be from 0 to 23. mm and ss may be from 0 to 59.

8.4 Formatting the History Log File

The HISTORY.SYS file may be used as is, or may become the data entry mechanism for a more complex reporting system that you design. The n/STAR Distribution Diskette includes a sample program showing how the event log might be processed. This program was written in BASIC, then compiled, and is called PRTLOG.COM.

To see how PRTLOG works:

1. Set the system clock to the correct date and time.

2. Enable system event logging using selection number 3 on the MAINT menu.

3. Exit from MAINT and cause some events to occur. Log on, log off, execute various CP/M commands and programs.

4. Run MAINT and select item number 4, Get History Log File.

5. Exit from MAINT and type

PRTLOG <RETURN>

The screen should display a formatted list of events similar to the following:

```
|DATE       TIME        USER ID    UNIT      EVENT     ELAPSED TIME
|=============================================================
|
|7/2/84     9:26:38     DAVE       245       LOGON
|7/2/84     9:30: 0     GARY       221       LOGON
|7/2/84     9:45:23     SUSAN      246       LOGON
|7/2/84     9:50:21     DAVE       245       LOGOFF          23:53
|7/2/84    15:20:34     GARY       221       LOGOFF        5:50:34
|7/3/84     1: 2:59     SUSAN      246       LOGOFF       15:17:36
|
~
```

If you want to print the system event log, first press

```
<CTRL>-P <RETURN>
```

The screen displays

```
~
|
|(CRTL-P IS ACTIVE)
|A>_
|
~
```

Then type

```
A>PRTLOG <RETURN>
```

The system now displays and prints the system event log on the printer assigned to your list (LST:=) device (or spools the print job). When you are finished printing, type <CTRL>-P again to switch off print echo mode.

PRTLOG is located on the SYSTEM Volume and has its $SYS attribute set, so you may type PRTLOG from any work area. The file HISTORY.SYS must reside in the Volume assigned to your current User Drive. If the HISTORY.SYS file is not present, the screen displays

```
~
|
|The file 'HISTORY.SYS' was not found on the default drive.  Job terminated
|
~
```

If you receive this error message, at least one of the two following conditions apply:

1. You have not retrieved the event log file from the MAINT Volume. (Use selection 4 in the MAINT menu.)

2. The event logging feature is disabled. (Use selection 3 in the MAINT menu.)

Once you understand how system event logging operates, you may want to design customized event reports. For this reason, Molecular includes the source code for the program PRTLOG in the file PRTLOG.BAS located on the Diagnostic Distribution Diskette. This source code is written in CB80 BASIC. You must have a good understanding of BASIC language programming to modify the program.

Chapter 9. Backing Up the System

This chapter describes a VERY important system administrator responsibility: backing up the data on your system.

9.1 The Importance of Backing Up Your System

Perhaps the most important job you will perform as system administrator is backing up your system.

Keep in mind that your computer system is a complex electronic and mechanical device. Although it has been designed for continuous operation with high reliability, your system may eventually break down. And even if you experience years of trouble-free service from the computer, you will no doubt experience power outages from time to time.

When power fails, or whenever the computer is shut of incorrectly (for example, by pulling the power cord), any data in the computer's electronic memory is lost. For example, if seven users are doing word processing and have open files in their Application Processors' memory, a power failure will cause all of their work during the current session to be lost. (Users who learn to periodically save their work will minimize their losses.)

If the system "crashes," it is likely that data that is stored on the hard disk will be lost. System crashes can sometimes be caused by power failures, but can also be caused by other factors, such as jarring the computer, power surges, and occasional hardware failures.

Even if you never have a power failure and never experience hardware failures, your users will occasionally delete a file accidentally.

To minimize loss of productivity and the frustration of losing data, all computers must be periodically backed up. Backing up a computer involves making a copy of all the data on the system, and storing the copy in a safe place in case it is needed. Backing up is a simple task, but it must not be overlooked under any circumstances. If your experience are like mine, the first time you do not back up the system will be the first time you have a problem.

9.2 Deciding Upon Frequency and Method of Backup

Now that you have decided you will faithfully back up your system and never put it off until tomorrow, you must decide how often you will perform the ritual, and what method you will use.

9.2.1 Frequency of Backup

Only you can decide how often to back up. You must take into consideration how much productivity your company can afford to lose and balance that against the time it takes you to back up the system, keeping in mind the cost of your time.

If you decide that your users could, in the event of a major system crash, lose three days' work without causing a major setback, then you should back up the system once every three days.

If your analysis of the situation indicates backing up the system once a week, consider yourself lucky.

More often, however, you will decide that you must back up your computer once per day, or once every other day. Some critical and highly dynamic installations may need to be backed up more than once per day.

9.2.2 Method of Backup

Once you have determined how often to back up your system, you must choose a method of backup. You may want to use a two-tier method of backup, or a three-tier method.

In the two-tier backup method, you copy all the system's data files onto one set of tapes or diskettes (labeled "A"), and store these in a safe place. Then, next time you back up the system, you use a different set of tapes or diskettes (labeled "B"). The third time you back up, you record over data on the first set of tapes or diskettes (the "A" set), and the fourth time, you use the "B" set again. In this way, you always have two sets of tapes or diskettes containing some version of the same data. If something happens to your computer while you are backing up on one set of tapes or diskettes, you have another backup copy from which the system could be restored.

A three-tier backup system is even more secure. In this method, you use an "A," "B," and "C" set if tapes or diskettes. Then, whenever you are backing up the system onto one set of tapes or diskettes, you have two backup copies in reserve. This method should be used when loss of data would be catastrophic to your company's operation.

If you data is important enough to require a three-tier backup scheme, you should keep your oldest backup copy (for example, your "A" copy during the third backup) off site. Then, if a catastrophe occurs involving your company's facilities, your valuable data will be secure.

The message we am trying to convey is: Develop a method for backing up your system, then use that method consistently.

When backing up the system, you will normally only want to back up data files. You should make a back up copy of each program after you initially load it onto the system. Since programs generally do not change as they are used, a one-time backup is usually all that is needed.

9.3 Backing Up On Diskette

If your system has no tape backup option, you will back up your system on diskette. This section describes how to do this.

To begin, you must have a copy of your system's current Volume assignments. You should be keeping a Volume Assignment Chart as you add and delete Volumes. If you do not have such a chart, perform the following steps:

1. Press **<CTRL>-P.** This turns on printer echo mode, so that everything displayed on your screen is also sent to the printer.

2. Type **O:VOLS <RETURN>.** The screen will display a matrix of Logical Drives and User Numbers and display each Volume name in its actual location. After each screen displays, press any character to continue. When the prompt returns, again press **<CTRL>-P** to turn off printer trace mode. (If your normal printer is a despooling printer, type **LIST <RETURN>** to actually print the information obtained in this exercise.) You now have a complete list of all Volumes on the system.

Now, you are ready to backup the system. Use the PIP command described in the n/STAR User's Guide to copy the desired files onto diskettes. Label the diskette carefully, and store them safely away.

As you will discover, this method is practical only when backing up small amounts of data (depending upon the model, a diskette holds a maximum of .36 megabytes [Series 9], .5 megabytes [Supermicro 8 and Supermicro 32], or 1.0 megabytes [Supermicro 16X and Supermicro 32X]). For example, a Series 9 with a single 20 megabyte hard disk drive would require approximately 56 diskettes to back up, if the hard disk were full.

If you want to make the job of backing up on diskettes somewhat easier, you should obtain one of the programs specifically designed for backing up a system onto diskette. One such program is called SWEEP and is in the public domain. Another program is called Backrest and is available from Stok Software, Inc., 17 West 17th Street, New York, NY 10011. Backrest lets you specify User Numbers, Partitions, and individual files to back up and/or exclude from backup, and lets you do a multi-volume diskette backup operation in one step.

To back up more than a few Volumes, you should have the optional tape backup unit described in the next section.

9.4 Backing Up On Tape

The optional tape backup unit makes system backup much easier and faster than using diskettes. Each tape cartridge used by this unit holds 20 or 45 megabytes of data (20 MB for the Supermicro, 45 MB for the Series 9).

Various systems use different tape backup systems and have different procedures for use. For detailed information on tape backup, refer to the Molecular Tape Backup User's Guide. This manual covers how to set up the system for desired options, how to backup and restore information to and form the tape, and how to perform other useful functions with the Tape Backup System.

9.5 Summary

You must regularly back up your computer system. Once you decide upon a method and frequency for backing up the system, you must adhere to this scheme rigidly.

In this chapter, you learned about the importance of regular backup, and you learned a few things about the mechanics of backing up a Molecular system.

In the next chapter, you will learn about certain functions you can perform in Diagnostic Mode.

Chapter 10. Diagnostic Mode Commands

This chapter explains how to perform specific functions in Diagnostic Mode, such as formatting diskettes, copying complete diskette images, and upgrading n/STAR to a new version. To begin, though, you need to understand the difference between Diagnostic and Multiuser Modes.

10.1 Diagnostic vs. Multiuser Modes

Your Molecular computer system can operate in one of two distinct modes: Multiuser Mode and Diagnostic Mode. The two modes are mutually exclusive -- when you are in Diagnostic Mode, no other users can user the system.

Your Molecular system consists of, among other things, a File Processor and one or more Application Processors.

When users are connected to Application Processors and the system is booted from the hard disk (normal power-on sequence), the system is in Multiuser Mode. The File Processor TERMINAL connector is inactive while the system is in Multiuser Mode (however, you can reset the entire system by pressing **<BREAK>** on a terminal connected to the File Processor TERMINAL connector. You must use caution here, as this will destroy all data in RAM of all users' Application Processors.

When one terminal is connected to the File Processor and the system is booted from a diskette in the diskette drive, the system is in Diagnostic Mode. All Application Processors are inactive while the system is in Diagnostic Mode, and the system is strictly single-user.

In Multiuser Mode, the hard disk Logical Drives (Partitions) begin with A. The number of Logical Drives determines how many letter designations are used. G, H, O, and P are always reserved for diskette access in various formats. When you turn the power on, the operating system boots from the information located on Logical Drive A, User 0 (the SYSTEM Volume).

In Diagnostic Mode, the diskette drive becomes Logical Drive A, then the data from Logical Drive A (in Multiuser Mode) appears instead on Logical Drive B. All Logical Drives are thus shifted one letter designation upward in the alphabet. When you turn power on (or otherwise coldstart the system), the operating system again boots from A0; however, this time A0 is the diskette drive.

There is no concept of n/STAR Users and Volumes in Diagnostic Mode; the system instead operates as a CP/M system, and CP/M User Numbers must be used to access various Volumes on the hard disk. In other words, to access the files in a Volume which resides (in Multiuser Mode) in Logical Drive B, User 5, you must enter the commands:

```
C: <RETURN>

USER 5 <RETURN>
```

(Remember that the Logical Drives are shifted one letter in the alphabet.)

To learn how to set up your system for Diagnostic Mode or for Multiuser Mode, refer to the applicable Installation Manual.

10.2 Formatting Diskettes

This section explains how to format diskettes on your Molecular system. Before a diskette is used for the first time it must be formatted. The formatting procedure creates the file structures that must be present before a blank diskette can be used for storing data.

CAUTION

Formatting erases all the information stored on a diskette.

Before you start the diskette-formatting procedure:

1. Make sure the system is cabled for Diagnostic Mode.
2. Bring up the system in Diagnostic Mode using a bootable Diagnostic system diskette.
3. Follow the sequence applicable to your system.

10.2.1 Formatting 8" Diskettes

1. Type

DKM

and press **<RETURN>**. The screen displays

```
|                Diagnostic Diskette Maintenance Program
|                Ver n.n                              mm/dd/yy
|
|
|S = Single Sided, D = Double Sided ([])
|
~
```

2. Press

S

or

D

Do not press RETURN. The screen displays

```
~
|
|S = Single Density, D = Double Density ([])
|
~
```

3. Press

S

or

D

Do not press RETURN. The screen then displays

```
~
|
|V = Verify, F = Format
|
~
```

4. Press

F

Do not press RETURN. The screen displays

```
~
|
|WARNING:  This operation will destroy ANY existing data on the disk!
|
|Insert Disk, hit "CTRL/S" to continue, "CTRL/C" to abort ([])
|
~
```

5. Remove the Diagnostic Diskette. Place a write-enable tab on the diskette to be formatted and inert it into the diskette drive.

6. Press

   <CTRL>-S

   (press down and hold the CRTL or CONTROL key, then press the S key) to continue with the formatting procedure. The screen displays

```
~
|
|CYL cc   TRK t - SEC ss -
|
~
```

as the formatting proceeds. cc is the cylinder number, t is the track number, and ss is the sector number that is currently being formatted. After the diskette is formatted, the program automatically goes through the diskette again and verifies that the formatting code is present and correct.

When the formating and verification procedures are complete, the screen displays

```
~
|
|COMPLETE- hit "CTRL/S" to restart, "CTRL/C" if done ([])
|
~
```

7. Press

<CTRL>-S

to return to the V = VERIFY, F = FORMAT prompt.

8. If you are done with the DKM routine, remove the newly formatted diskette. Insert the Diagnostic Diskette. Then press

<CTRL>-C

10.2.2 Formatting 5-1/4" Diskettes

1. Type

FDEXER

and press **<RETURN>**. The screen displays:

```
**************************************
5-1/4 floppy disk diagnostic utility
VERSION 1.00                27 FEB 84
**************************************


Please enter <ESC> for parameter menu or <CR> to begin test:
```

5. Press

   <ESC>

   and then press <RETURN>. The screen blanks and then displays:

```
                ********************************
                 FLOPPY DISK PARAMETER OPTIONS
                ********************************

          Please enter parameter or <CR> to accept value shown.
          All numerical values are hex.
          Press <ESC> to exit menu:

          [R]  TEST:  HOME,SEEK,WRITE,FORMAT,DISPLAY,ERROR,INIT (H,S,R,W,F,D,
          [R]  TYPE:  FIXED,INIT,INCREMENTAL,CONVERGENT,RANDOM (F,I,C,R)

          [0000]  BEGINNING CYLINDER NUMBER
          [0027]  ENDING CYLINDER NUMBER
          [0000]  BEGINNING HEAD NUMBER
          [0001]  ENDING HEAD NUMBER
          [0001]  BEGINNING SECTOR NUMBER
          [0009]  ENDING SECTOR NUMBER
          [6086]  WRITE TEST WORD PATTERN
          [0001]  MAXIMUM NUMBER OF ERROR
```

   The cursor is between the first bracket.

6. Enter

   F

   in the first bracket to select **FORMAT** and then press **<RETURN>** to move the cursor down to the next bracket.

7. Enter

   I

   in the second bracket to select **INCREMENTAL** and then press **<RETURN>**.

8. Press

   <ESC>

   and then press **<RETURN>**. The screen blanks and again displays:

```
****************************************
5-1/4 floppy disk diagnostic utility
VERSION 1.00                  27 FEB 84
****************************************


     Please enter <ESC> for parameter menu or <CR> to begin test:.
```

9. Remove the Diagnostic Diskette from the Diskette Drive. Be sure that there is no write-protect tab over the write-enable notch on the diskette to be formatted, and then insert the diskette into the diskette drive.

CAUTION

Formatting will destroy any data stored on a disk. Be certain the diskette in the drive does not contain valuable programs or data before doing the next step.

10. Press **<RETURN>** to start the formatting processs. The screen blanks and displays:

```
|This test formats one cylinder from a incrementally selected drive,
|cylinder and head.
|Each parameter progresses through its specified range,
|drive number varying most, then cylinder, then head.
|
|WARNING:  Existing disk data will be destroyed.
|
|DRV: NNNN  CY: NNNN  HEAD: NNNN  SEC: NNNN  PASS: NNNN  ERR: NNNN
|
~
```

Where **NNNN** are hex numbers that vary as formatting progresses. When formatting is complete the following is added to the display:

```
~
|
|Press any key to continue or <ctrl-c> to exit.
|
~
```

11. Press **<RETURN>** to return to the screen display of Step 8. If you wish to format another disk, remove the formatted diskette from the drive, insert another blank disk, and go to Step 10.

    If you are done formatting, remove the formatted diskette from the drive, insert the Diagnostic Diskette in the drive, and press **<CTRL>-C.**

10.3 Copying Diskette Images

Provided with your system is a program for copying complete images of diskettes (including boot tracks, if present). This makes it easy to make copies of bootable system diskettes without requiring a separate series of steps to make the copies bootable (as would be required if you copied the diskettes using the PIP command).

The IMAGE utility also comes in handy for making a series of copies of the same diskette, because it makes an image copy of the source diskette on the hard disk which can then be placed on as many blank diskettes as required.

To copy a diskette image, follow these steps:

1. Bring up the system in Diagnostic Mode, using a bootable Diagnostic Diskette. (Refer to the appropriate Installation Manual for the procedure for making diskettes bootable.

2. Format a diskette to use as the target diskette (if necessary).

3. Type

   A>IMAGE <RETURN>

   the screen displays

```
|*****************************************
|FLOPPY IMAGE COPYING UTILITY mm/dd/yy
|
|COPYING OPTIONS TAKE THE FOLLOWING FORMAT:
|
|FILENAME(VALID CP/M)  SIDE(S/D)  DENSITY(S/D)  FLOPPY READ/WRITE(R/W)
|
|EXAMPLE, SINGLE DENSITY FLOPPY READ:   "FILE1 S S R" <CR>
|
|EXAMPLE, DOUBLE DENSITY FLOPPY WRITE:  "FILE1 S D W" <CR>
|
|PLEASE INSERT FLOPPY AND ENTER OPTIONS: _
|
~
```

4. Remove the Diagnostic Diskette and insert the source diskette. (Note that the source diskette may be the Diagnostic Diskette, in which case you would leave it in the diskette drive for the following step.)

5. Type

   file name S S R <RETURN>

   Do not use an extension when specifying a file name, as IMAGE supplies the extension ".IMG". The file name you are entering is the name of the file which will be used to save the diskette image on the hard disk.

   Unless you specify a Logical Drive letter (remember that you are in Diagnostic Mode), the file is written into B0 (the SYSTEM Volume - A0 in Multiuser Mode). If you want the file to go to another Logical Drive, enter the desired letter, followed by a colon, followed by the above specification. For example, to write the file to the C Logical Drive, enter **C:file name S S R.**

   After entering the desired options, the screen displays:

```
~
|
|TRACK nn
|
~
```

   The track number increments as the diskette image is written to the hard disk. When the copy is complete, the screen displays

```
~
|
|PRESS CTRL-C TO EXIT OR ANY OTHER KEY TO CONTINUE.
|
~
```

6. Press **<RETURN>**. The program restarts and the screen displayed in Step 3 again appears.

7. Remove the source diskette and insert a formatted target diskette into the diskette drive.

8. Type

   file name S S W <RETURN>

   The file name used here must exactly match the file name supplied in Step 5. If you specified a Logical Drive letter in the write operation, you must specify the same letter at this time. After making your entry, the screen displays

```
~
|
|TRACK nn
|
~
```

   The track number increments as the diskette image is written from the hard disk to the target diskette. When the copying process completes, the screen displays

```
~
|
|PRESS CTRL-C TO EXIT OR ANY OTHER KEY TO CONTINUE
|
~
```

9. At this point you can make additional copies by returning to Step 6, or you can exit from the program by reinserting the Diagnostic Diskette and pressing **<CTRL>-C**. The A> prompt returns.

   You may elect to keep the image file on the hard disk so that you can make additional copies in the future, or you may want to erase the file to make the disk space available.

Example

Since this disk copying procedure involves several steps, let's look at an example to make certain that you understand the process. In this case, we will make a back-up copy of the n/STAR Distribution Diskette. This is a good example, because it has files residing under multiple CP/M User Numbers, making it cumbersome to copy using the PIP command.

1. Connect a terminal to the TERMINAL (A) port of the File Processor. Insert the bootable Diagnostic Diskette into the diskette drive. Turn on the power (or press **<BREAK>** if power is already on).

2. Type

   IMAGE <RETURN>

3. Remove the Diagnostic Diskette from the diskette drive and insert the n/STAR Distribution Diskette (your source diskette).

4. Type

   NSTAR S S R <RETURN>

   This tells the IMAGE utility to read the contents of the single-sided, single-density diskette in the diskette drive, and place the information into a file called NSTAR.IMG on the B Logical Drive.

5. When the screen indicates that the procedure has finished, press **<RETURN>**. This returns you to the IMAGE menu.

6. Remove the n/STAR Distribution Diskette and insert a blank, formatted diskette.

7. Type

   NSTAR S S W<RETURN>

This tells the IMAGE utility to write the contents of the file B:NSTAR.IMG onto the diskette that is in the diskette drive.

8. When the process completes, remove the target diskette and insert the n/STAR Diagnostic Diskette. Press **<CTRL>-C.**

9. Type

ERA B:NSTAR.IMG <RETURN>

to erase the file from the hard disk, if desired.

10.4 Loading n/STAR onto the Hard Disk

Your system comes with n/STAR already on the hard disk. However, if you change your system configuration, or somehow erase the contents of the hard disk, you must reinstall n/STAR. This section explains the procedures for doing this.

You will need to reinstall n/STAR if:

- You are replacing your existing version of n/STAR with a new version of n/STAR.
- The contents of the hard disk are destroyed.
- The hard disk drive is replaced.

You may install n/STAR on your hard disk in one of three ways, each producing a different result:

- Install n/STAR and the n/STAR Utilities (upgrading n/STAR)
- Install n/STAR Boot Tracks only (troubleshooting)
- Reinitialize the system and install n/STAR (after a fatal error or hard disk drive replacement)

Each of these methods is explained in the following subsections.

10.4.1 Installing n/STAR and the n/STAR Utilities (Upgrading n/STAR)

Use the following procedure to upgrade your system to a new version of n/STAR, or at any time you want to copy both the operating system boot tracks and its utility programs from the Distribution Diskette to the hard disk.

((To be supplied)) See supplement at back of manual

10.4.2 Installing the n/STAR Boot Tracks Only (Troubleshooting)

The following procedure explains how to install only the boot tracks of n/STAR. You may want to do this during certain troubleshooting procedures, but ordinarily you will want to use the procedure explained in the previous subsection.

1. Using the bootable n/STAR Distribution Diskette, bring up the system in Diagnostic Mode.

2. Type

   GENSTAR <RETURN>

   the screen displays

   ```
   ~
   |
   |NEW VERSION IS n/STAR n.nnn
   |
   ~
   ```

   where n.nnn is the version number of the n/STAR diskette.

3. Press

   Y

The screen displays

```
~
|
|FUNCTION COMPLETE
|
~
```

4. Remove the n/STAR Diskette from the diskette drive and store it in a safe place.

5. Press <BREAK>.

6. Reconfigure the system for Multiuser Mode, then press <BREAK> to bring up the newly installed operating system

10.4.3 Installing n/STAR on an Empty Hard Disk (Fatal Error)

The following procedure explains how to install n/STAR on an empty hard disk. You would normally do this only after a fatal hard disk failure or after installing a new hard disk drive.

((to be supplied)) see supplement at back of Manual

10.5 Summary

In this chapter, you learned some of the key operations which can be performed in Diagnostic Mode. You learned how to

- format diskettes
- make copies of diskette images
- install or upgrade n/STAR onto the hard disk

In the next chapter, you will learn how to handle common problems that can occur with your system.

Chapter 11. What to Do in Case of Breakdowns

As a system administrator, you will have many minor problems to handle daily, and occasionally you will have a major problem to solve. This chapter suggests ways to handle these problems to keep your system up and running as much as possible.

11.1 Overview

The most important tool in fixing problems is common sense. Unfortunately, common sense is not something that can be learned from a book. However, we can suggest ways to approach problems which are based upon common sense. Keep in mind that the ideas presented in this chapter are suggestions -- if you know a better way to handle a certain situation, by all means use it.

By following the information in this chapter, you will correct many of the problems you encounter, and even if you do not fix the problem, you will save the service person's time and your company's money if you can at least give a good diagnosis of the problem.

A very important part of system administration is keeping a system log. Be sure to keep a list of problems you encounter in your system log, including the date and time of the problem, a description of the problem, the date and time the problem was fixed, and a description of the corrective action taken.

11.2 Printer Breakdowns

By far the most troublesome part of a computer system is its printers. This is because printers are the most mechanical part of the system, and because they use expendable supplies. For these reasons, the first troubleshooting section in this chapter deals with printer problems.

11.2.1 Diagnosing Printer Problems

The most important aspect of fixing printer problems is in understanding how to correctly use the printer. Read the User's or Operator's manual that came with your printer to make sure paper is correctly loaded, print elements are correctly mounted, and the ribbon is installed properly. If you still cannot make your printer work correctly, consider the following:

Printer problems are characterized by printers that do not work, work only intermittently, or do not produce satisfactory results.

In this discussion, we are assuming that your printer was properly installed and was working properly before a problem developed.

1. Is the printer set up as a despooling printer?

   If it is, enter **QMAINT** to examine the print queue. When the print queue displays, enter the <queue name> of the printer in question. When the resulting queue is displayed, are there any active jobs indicated? Are the words "HOLD CONDITION" displayed? If so, type **RELEASE <RETURN>** and then press **<RETURN>** three times to return to the Administrator Menu. (Refer to the n/STAR User's Guide for more information on how to use the QMAINT utility.)

   If a despooling printer is "hung" and no other methods fix the problem, try resetting the printer. To do this, you must determine the decimal m/BUS address of the despooling printer's Application Processor. Let's assume that the address for your system's despooling printer is 235. To reset this Application Processor, select **I** from the Administrator Menu, then type

   RESET 235 <RETURN>

   After a few seconds, the Application Processor with the address 235 is reset. (This is equivalent to pressing **BREAK** on a terminal.)

NOTE

> Resetting an Application Processor resets both ports. Therefore, if you have a despooling printer attached to both ports, RESET will cause the working printer to stop printing momentarily, then will cause the suspended job to start printing from beginning.

2. Is the printer set up as a System printer?

   If the troublesome printer is a System printer, the problem may be that someone else has attached the printer.

   To determine who has attached the System printer, enter **DEVICES <RETURN>**. The screen displays a list of system devices, including the System printer. The right column of the display indicates the m/BUS address of the Application Processor which has attached the System Printer. Make a note of this address, then type **WHO <RETURN>** to obtain a list of who is on the system. Find the m/BUS address in question and you will see the User ID of the person who has attached the System Printer.

   To release the System Printer, enter ^Q on the terminal connected to the Application Processor which has attached the printer, or log off that user.

3. Is the printer a Local printer?

   If the troublesome printer is set up as a Local printer, it should print immediately upon command. Check the LST:= assignment in the appropriate user's User Profile. If this is O.K., press **BREAK** on the terminal in question. If there is still a problem, check the cable and make sure it is connected to the appropriate Application Processor.

   Enter ^P, then type some characters. A Local printer should print everything that displays on your screen after you enter ^P. Enter ^P again to turn off this echo function.

11.2.2 Fixing Simple Problems

Some of the solutions should be obvious when the problem is discovered. If the printer is out of ribbon or paper, simply install more and continue. If there is no power to the printer, correct the situation. If the printer is configured incorrectly, refer to the printer's documentation and to the Installation Manual that came with your system to determine how to correctly configure the printer and n/STAR.

If none of the clues just described leads to a solution to your problem, the next step is to switch around the hardware. Perform these steps one at a time the idea is to narrow the problem down to a specific component.

1. Be sure that the cable from the computer to the printer is connected properly, and that the connection is secure. Make sure that the cable is connected to the correct connector on the correct Application Processor.

2. Take the cable off a working printer of the same type, and use it to connect the problem printer. Try printing again. If the problem is gone, buy or make a new cable.

3. Switch Application Processors (Local and System printers) or switch ports (Despooling printers). Reconfigure n/STAR (using selection **A** option 9) so that the system is made aware of the change. Try printing again. If the problem is gone, obtain a new Application Processor. (Or, if one port of an Application Processor is bad, you may be able to rearrange the boards so that the good port can be used.)

4. If one is available, connect a different printer to the same cable and Application Processor. Try printing again. If the new printer works, the problem must be in the printer you just disconnected.

You have now narrowed the problem down to either a bad cable, a bad Application Processor, or a bad printer. If you are not able to fix the problem, at least you now know how to describe the problem when you call for service.

To summarize, you should isolate the problem to either the computer, the printer, or both, then confirm the problem by substitution, if possible, and finally, contact the appropriate support personnel if you cannot fix the problem yourself.

11.3 Terminal Breakdowns

Although they do not happen as frequently, terminal problems can be annoying if they hamper productivity. This section describes some typical problems and proposes some solutions.

The process of checking and elimination is the same for any computer peripheral as the process described for printer problems. First, ask yourself a logical series of questions:

1. Is the power on?

   Check the power cord, receptacle, switch, and fuse.

2. Is the contrast turned up?

   Some terminals have contrast knobs on the front or back of the case, others use a function key combination (such as FUNCTION UPARROW) to increase contrast (apparent brightness).

3. Is the keyboard connected to the terminal?

   Many terminals have detached keyboards that have some sort of plug to connect the keyboard to the main cabinet.

4. Have you tried resetting the terminal?

   Some terminals can "hang" and must be reset. Look in your terminal manual for information on how to reset the terminal. Your terminal may have a RESET key, or it may be reset by a combination of keystrokes (such as FUNCTION-SHIFT-CONTROL-RUB OUT). If you cannot determine how to reset your terminal, turn the power off, wait ten seconds, then turn the power back on. (Note that this also resets the terminal's Application Processor.)

5. Does the terminal respond when you press **BREAK**?

   Pressing **BREAK** resets the terminal's Application Processor, and also clears the Application Processor's memory of any programs or data.

   If the user was logged on when the terminal stopped working, pressing **BREAK** should cause prompt (A>) to appear (if there is no initial command).

If the user was not logged on, pressing BREAK should cause the logged off screen to appear (see Chapter 2).

NOTE

Pressing <BREAK> means pressing any key or combination of keys that cause the terminal's Transmit Data (TXD) line to go high for at least 50 milliseconds. On some terminals, for example, press <BREAK> 3-4 times in rapid succession. On others, press and hold the CONTROL key while pressing <BREAK>. On most terminals, simply press the <BREAK> key and hold it down for 1-2 seconds.

6. Are other terminals working?

If so, try connecting the problem terminal to another Application Processor. If the terminal still does not work, you have isolated the problem to the terminal.

If the terminal works on another Application Processor, the problem could be a bad cable or a bad Application Processor. Try switching these around (one at a time) to determine the cause of the problem.

If other terminals are not working, proceed to the next section to learn how to diagnose system problems.

11.4 System Breakdowns

System breakdowns are characterized by problems that affect more than one user, or problems that affect system resources, such as the diskette drive, hard disk drive, tape backup unit, printers, modems, and so forth.

11.4.1 Diagnosing and Fixing System Breakdowns

The methods for diagnosing system problems are similar to those you learned earlier in this chapter; however, in most cases, you do not have the luxury of "spare" parts (Application Processors, cables, terminals, and so forth) to switch around.

If all terminals do not respond, reset the system as follows:

1. Using a terminal close to the computer, connect a cable between the File Processor A-Port (the upper connector on the upper rear panel of the cabinet) and the connector on your terminal.

2. Press **BREAK** on the terminal connected to the File Processor. The screen on a Supermicro Series computer should display

```
FP RESTART.... n/STAR  <x.xx>
```

where x.xx is the n/STAR Version Number.

The screen on a Supermicro X Series or Series 9 computer should display

```
FP<xxxx> <ddmmyy>
UNIT FF
TESTING RAM.....GOOD
```

where xxxx is the File Processor PROM (Programmable Read-Only Memory) Version Number, and ddmmyy is the revision date.

If something else displays, see Step 5, below.

3. If this reset operation was successful, you should now be able to log on at any other terminal. Reconnect the terminal connected to the File Processor to its normal Application Processor.

4. If you still cannot log on from any other terminal, there is a problem with the computer. See Step 5, below.

5. If, after performing steps 1 through 4, you still cannot log on, perform the following steps:

   a. Insert the bootable n/STAR Distribution Diskette into the diskette drive.

   b. From the terminal connected to the File Processor (see Step 1, above) press <BREAK>. The screen described in Step 2 should display, followed by

```
Molecular (or Supermicro)*<model number>  <size>MB Diagnostic Diskette

56K CP/M V<version number>
A>

~
```

   c. Type **DOWN** and press **RETURN**. After a few seconds, the computer should shut off.

      If it shuts off, remove the diskette from the diskette drive, wait at least five minutes, then turn the power back on. The system should now back to normal (except for the terminal connected to the File Processor).

      If the computer does not shut off, or if it does not come up properly after being shut off, the problem is beyond the scope of this manual. You should call your next level of support and report the problem and the steps you took to try to correct it.

11.4.2 What to Do if Someone Trips Over the Power Cord

This section actually describes how to restart the system after a power failure of any kind. If someone actually trips over the power cord, you should give some serious thought to relocating the system, or at least rerouting the power cord.

If power has failed, those users with files open will have lost their most recent work (that which was not yet saved on disk). There is nothing you can do to recover this lost data.

To restart the system after power is restored, proceed as follows:

1. Wait at least five minutes from the time the power was restored, to make sure that it is not going to fail again. After many power outages, the power will cycle on and off several times before being completely restored.

2. Wait at least five minutes for the hard disk to stop and stabilize before reapplying power, even if the problem was not caused by a power outage.

3. Press the Power On button on the front of the computer.

4. The system should now come up and run normally. If it does not, go through the procedures in the rest of this chapter to diagnose and fix the problem.

If power outages are a common occurrence in your area, you may want to consider a non-interruptable power supply with a capacity large enough to let you save data files onto the hard disk after power fails. Using the same logic that you applied in deciding how often to back up your system, you must weight the cost of a non-interruptable power supply against the cost of losing a certain amount of data.

11.5 How to Handle User Requests

Although requests from users are not breakdowns, they often have the same effect; that is, the user cannot perform some task for some reason.

1. The user reports that the message "**Directory Full**" or the message "**Disk Full**" appears on the terminal screen and they cannot save a file.

   The problem here is that the Logical Drive (Partition) in which the users Volume resides on the hard disk has become full.

   To fix the problem, you must erase files from the Logical Drive. First, ask all your users to delete any backup files they may have that are not necessary to keep (these files end with the extension ".BAK".

   If this does not provide sufficient disk space, consider your system's Volumes, their relationship to one another, and the amount of space occupied by the files in the Volumes residing within each Logical Drive. You may be able to free up disk space by relocating a Volume to another DRV:/USR: location.

   If you still cannot obtain sufficient disk space, ask your users to archive some of their infrequently used files onto diskettes. And if this is not acceptable, consider obtaining a disk expansion unit from your Molecular Dealer to double or triple the amount of available disk space.

2. The user requests another work area in which to do some work.

   This requires that you create a new Volume for the user using the MAINT Utility described earlier in this Manual. Once you have created a Volume, use MAINT option 1 or ASSIGN to the desired Volume to one of the work areas as needed.

3. A person wants to be added as a new user on your system.

   This will require several steps, including creating a User ID and at least one Volume, then setting up the User Profile. Earlier chapters in this manual explained how to perform these functions using the MAINT utility.

4. A user has inadvertently erased an important file and asks that you restore that file.

Refer to the Molecular Tape Backup User's Guide for information on how to back up and restore files.

With this information and the background from the rest of the manuals included with your system, you should be able to handle most user requests. As you gain experience, these procedures will become easy to perform.

11.6 How to Get Help

There will be times when you cannot solve a problem by yourself. When this happens you will need to get help.

Your first request for help should be directed to the dealer who sold you your system (except see **The Molecular Monthly Maintenance Agreement** in the next section). If you do not get adequate help from your dealer, you should contact the nearest Molecular Regional Sales Office. Molecular is interested in knowing about any of its independent distribution channels that do not provide adequate support.

For service under the terms of the warranty that comes with your system, first contact your dealer, then contact Molecular's Customer Support Department. Do not return any equipment to Molecular Computer without a Return Material Authorization (RMA) Number. Equipment received without proper authorization will be returned to its sender.

Another very effective way to learn about solutions to common problems is to join a users' group. Several areas have users' groups specifically for the Molecular Computer.

11.7 The Molecular Monthly Maintenance Agreement

Molecular provides a comprehensive monthly maintenance agreement which can include both hardware and software support, and automatically provides you with updates to both software and manuals as they become available.

For more information on this service, read the information provided with your computer system, or contact Molecular's Customer Support Department.

11.8 Summary

In this chapter, you learned how to diagnose and fix simple problems using a common-sense approach. Even if you do not fix a problem using these methods, you will learn enough about a problem to intelligently discuss it when you call for help.

This concludes the system administrator information provided by this manual. Good luck in managing your computer installation!

Appendix A. Manual Ordering Information

The following is a list of manuals with their associated part numbers. Use the manual description and part number when ordering.

Series 9 System Installation Manual	87100630
Supermicro Series Installation Manual	87100420
Supermicro X Series Installation Manual	87100430
Series 9 System Operator's Guide Supermicro X Series Operator's Guide	87100640
n/STAR User's Guide	87100650
n/STAR System Administrator's Guide	87100660
n/STAR Programmer's Guide	87100670
Tape Backup System User's Guide	87100680
CP/M Operating System Manual	87100100
ATOM Manual Set	98330011
ATOM Operations Manual	87100450
m/CALC Manual	87100470
m/WORD Manual	87100460
m/MAIL Manual	87100480
Molecular Model Interconnect Installation and User Manual (for 16X and 32X Computer Systems)	87100580
Menu Master User's Guide	87100270
Menu Master Reference Manual	87100260
Moleculcar MT-100 Video Display Terminal User Reference Manual	87100230

The n/STAR and Tape Utilities diskettes are distributed without a bootable CP/M on them. This is because the CP/M that is shipped to new customers is serialized and registered with DRI. It is the customer's responsibility to move it around to where he needs it. The following installation procedures begin by placing a copy of the serialized CP/M (or any other CP/M) onto the n/STAR, diskette.

- o Upgrade from a previous n/STAR release

Requirements: the n/STAR distribution diskette
a Supermicro diagnostic diskette
any bootable CP/M distribution diskette
a Molecular computer

Step 1. Make the diskettes bootable and copy.

a. The n/STAR and Tape Utilities diskettes must be made bootable before they can be used. If you have a bootable diskette from the last installation of your system (the CP/M distribution diskette) you can simply use SYSGEN to write your CP/M on the two diskettes. If the CP/M you have is not a 56K CP/M with the Molecular DBIOS, you must follow the procedure in Appendix 1 to MOVE your CP/M.

b. After you make the diskettes bootable, make copies using the IMAGE program on one of your Diagnostic Diskettes. Instructions for using IMAGE are contained in the n/STAR System Administrator's Guide or n/STAR Installation and User Reference Manual that came with your system.

c. File the original distribution diskettes safely away, and use your copies to perform the actual upgrade or installation.

IMPORTANT

The CP/M distributed with n/STAR 2.49 and later have been modified to run on the X-series hardware. The CP/Ms distributed before then will not operate on X-series hardware. The CP/M must have the new DBIOS installed to run on both the A and X versions of hardware.

Step 2. Determine the current disk configuration.

a. Insert your existing (earlier version) bootable Diagnostic Diskette.

b. Bring the system up in Diagnostic Mode.

c. Type

A>STAT B:DSK: [RETURN]

The screen displays the current disk configuration. Make a note of the number listed as the "Kilobyte drive capacity" and the number of "32-byte directory entries."

d. Remove the Diagnostic Diskette and insert a copy of your new bootable n/STAR Diskette.

e. Press ^C to inform the system that the diskette has been changed.

f. Proceed to the Step 3 below to install n/STAR from the distribution diskette.

Step 3. Install n/STAR from the distribution diskette.

IMPORTANT

The location of the Configuration sector has been changed in versions 2.60A and later. You must run the SYSINT "D" option when upgrading (you are prompted to do this as you proceed with the installation).

a. Type

SUBMIT GENSTAR [RETURN]

The screen displays

*** UPGRADE TO 2.62E ***

When SYSINT runs, DO NOT format or verify your disk.
Use the "D" option to reselect your disk configuration.
A>SYSINT

The installation procedure requires you to run SYSINT to set up the disk directories for directory hashing. This procedure is non-destructive to your existing data AS LONG AS YOU SELECT THE DISK CONFIGURATION CURRENTLY IN USE. The screen displays

SYSTEM DISK INITIALIZATION ROUTINE

DRIVE 0, 1, 2, 3 (□)

b. Enter the number of the hard disk drive to configure. Do not press RETURN. The screen displays

F=Format/Verify, V=Verify Only, D=Disk Option R=Redirect ([])

c. Enter

D

Do not press RETURN. Be certain that you do not select format or verify at this time. The screen displays

**********WARNING**********

TO CHANGE THE DIRECTORY/BLOCKSIZE OPTION ON YOUR DISK,
YOU MUST ARCHIVE ALL YOUR DATA AND REFORMAT THE DISK.

CONTINUE ? Y/N ([])

Since you will select the same option as you now are using, you may disregard this message. You will not destroy any data on your disk if you correctly follow this procedure. Type

Y

Do not press RETURN. The screen displays a table of possible disk configurations and details about each. At the bottom of the table, the screen displays

SELECT CONFIGURATION OPTION (0-4) ([])

d. Enter the number of the configuration your system is now using, as determined in Step 2 above. BE SURE TO ENTER THE CORRECT NUMBER, OR EXISTING DATA MAY BE DESTROYED. The screen displays a table of information pertaining to the configuration you select. At the bottom of this table, the screen displays

CONFIGURATION CORRECT ? Y/N ([])

e. If you are certain that you entered the correct configuration, type

Y

do not press RETURN. (If you entered the wrong configuration, type N to make another selection.) The screen displays

FUNCTION COMPLETE
Hit BREAK key to exit program

f. Press the BREAK key. The screen displays

```
A>GENSTAR

NEW N/STAR VERSION = 2.62E

FUNCTION COMPLETE

A\PIP B:=A:*.*[G1VR]
COPYING -
filename 1
filename 2
filename 3
      .
      .
      .
filename n
UPGRADE COMPLETE
A>
```

g. When all of the files are copied from the n/STAR Diskette onto the hard disk, remove the n/STAR Diskette from the diskette drive. Then press BREAK (with the terminal still connected to the FP) to bring up the system in Multi-User Mode under the newly installed version of n/STAR.

o Install n/STAR on a new system drive

NOTE

New systems have a bootable n/STAR already installed on the hard disk.

Requirements: the n/STAR Distribution Diskette
the CP/M Distribution Diskette
a Molecular computer

Step 1. Create a bootable n/STAR diskette.

Follow the procedure described in Step 1 above, under the heading "Upgrade from a prevoius n/STAR release."

Step 2. Initialize the system drive and install n/STAR.

a. Using a copy of your new, bootable n/STAR system diskette, bring up the Supermicro in Diagnostic Mode.

b. Type

SUBMIT INSTALL

and press RETURN. The screen displays

```
A>SYSINT
          SYSTEM DISK INITIALIZATION ROUTINE-

DRIVE 0, 1, 2, 3 ([])
```

c. Supply the appropriate information as you are prompted to format, verify and select disk options on this hard disk drive. (When this entire process is complete, you must run the SYSINT program on all add-on drives in the system.) When SYSINT is finished, the screen displays

```
FUNCTION COMPLETE
Hit BREAK key to continue
```

d. Press BREAK, and the screen displays

```
Supermicro*xx yyMB
56K CP/M V2.2
A>GENSTAR

NEW N/STAR VERSION = 2.62E

A>PIP B:=A:MESSAGE.SYS[VR]
A>PIP B:FS.SYS=A:GENSTAR.COM[VR]
A>PIP B:=A:*.*[G1VR]
COPYING -
filename 1
filename 2
filename 3
     .
     .
     .
filename n
A>GENSYSF
A>
```

e. When all files are copied onto the hard disk, remove the n/STAR Diskette from the diskette drive and store it in a safe place.

f. Press BREAK to bring up the system in Multi-User Mode operating from the newly installed version of n/STAR.

Your Supermicro has now been completely reinitialized, and contains only the operating system, utilities, and three user IDs. You must log on as either DEMO or MAINTUSR and use the utility MAINT to establish users and volumes.

Molecular Computer

n/STAR

User's Guide

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Molecular Computer
251 River Oaks Parkway
San Jose, California 95134

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Document Number 87100650

PREFACE

This manual describes how to use the Molecular n/STAR Operating System with your Molecular computer. It provides an explanation of how to perform specific functions, and it also provides an alphabetical listing of all the commands. This manual is one of a series of manuals on Molecular Computer systems. Other manuals cover installation, physical operation, system administration, and options.

This manual assumes that your computer is already installed and running correctly. If your computer is not yet installed and running, refer to the appropriate installation manual for site preparation, unpacking, and hardware and software installation information.

If your Molecular System is installed and ready to run, and you have not already done so, you should read the appropriate Operations Manual.This manual provides specific information on how to operate your computer hardware, including care and use of diskettes.

If you are the person responsible for controlling use of and access to your company's Molecular computer, you will find important information in the n/STAR System Administrator's Guide.

If your system has an option tape backup unit (allowing you to back up your data on tape cartridges rather than on diskettes), you will need to read the Tape Backup System User's Guide.

And, if you have a systems programming background and are developing application software packages for use on Molecular computers, you will need the information presented in the n/STAR Programmer's Guide.

Appendix A gives ordering information on these and other related manuals.

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Part I. An Introduction to n/STAR

Chapter 1. n/STAR Overview

One of the unique characteristics of a Molecular computer system is its computer-per-user architecture. Your terminal is connected to a personal computer (called an Application Processor) located in the system cabinet. It is your own computer, in the sense that it is separate from all other users' computers in the same system, and in the sense that it can only be used from your terminal (although other users may use your terminal by logging on with their user names).

Another important characteristic is that, within the system, each user's computer is interconnected with all the other users' computers, and with the system resources (the mass storage devices, printers, and so forth). Another complete computer-on-a-board called the File Processor has the task of controlling all of this intercommunication. Molecular calls this design a Local Area Network (LAN) in a box. (Most LANs in use today consist of several stand-alone personal computers connected together by an expensive control device.)

The design of the system requires a special operating system. (An operating system is a collection of programs that provides a basis for other computer operations. All sophisticated computers require an operating system; the type of operating system determines what kinds of application software can be run.) The Control Program for Microcomputers (CP/M) is a popular operating system for small business computers, and hundreds of excellent application software packages are available for CP/M-based computer systems.

CP/M, however, is not designed for a multi-user computer system. For this reason, Molecular designed its own multi-user, multi-processor, CP/M-compatible operating system called n/STAR. All application software that can run under CP/M can also run under n/STAR. And, in addition, many new possibilities exist that simply are not feasible with CP/M. For example, some users can run CP/M application software, while other users run software packages designed for MP/M (or, with certain options, packages designed for CP/M-86 or MS-DOS).

n/STAR is Molecular Computer's proprietary, multiuser, multiprocessor disk operating system. n/STAR controls the overall operation of your computer. It is the "master program" which lets other programs run, and which keeps all user's information separate, safe, and secure. n/STAR provides a means for you to use the computer without keeping track of the thousands of details required to make a computer useful.

For example, when you type a command to list all the files in your work area (which we will cover later) n/STAR does the work of locating the files, determining their names, and sending them to your terminal's display screen in a formatted, multiple-column list. You don't need to worry about where the files are located on the disk, where their names are stored, how to send data to a terminal, or how to make it look presentable.

Also, when you are ready to run an application program, n/STAR takes care of such details as locating the program, starting it, and handling input and output to and from the program (provided the program is compatible with n/STAR).

Because all users' computers are connected together, they can share information if desired. This sharing of information is the basis of the m/MAIL Electronic Mail System which is an important part of the Molecular's ATOM package (available from your Molecular dealer).

These are some of the things that an operating system does. The remainder of this manual explains the specific operations you can perform under n/STAR.

Chapter 2. n/STAR Tutorial

This chapter provides important information on the overall concepts of n/STAR. You should read this information before attempting any serious work on your Molecular computer, since a thorough understanding of how n/STAR works will help you handle various situations as they occur.

2.1 Files

The basic unit of information storage (as far as a typical user is concerned) is a file. As you use n/STAR, you will create useful information that you want to save for future use. A group of related information (such as a word processing document or a particular electronic spreadsheet) is a file.

When you (or an application program that you are running) create a file, the file is stored on the system's hard disk. In a multiuser computer system, it is important to be able to keep files you create separate from files created by other users. This separation provides a degree of security from other users accessing (reading, modifying, or erasing) your data.

2.2 Volumes

n/STAR divides the hard disk into Partitions. A partition (also called a logical disk drive) is a logical division of the total space on the hard disk. There may be from two to twelve partitions on the hard disk(s) in your system.

Each Partition can contain up to 16 separate areas called Volumes. Each Volume has a name so that it can be identified, and can optionally have a read or write password. (We will discuss passwords later.) The number of Volumes you can have on your system depends upon its hard disk capacity and upon how the hard disk was configured during installation.

If you understand how CP/M works (with a diskette divided into 16 user numbers), this can be related to how n/STAR uses Volumes. Each partition on the hard disk has 16 user numbers. Each of these user numbers is given a name. This is the Volume name.

Once n/STAR is set up (by the system administrator), users need only know the Volume name to access a Volume. There is no need to remember the partition letter and user number associated with each area on the disk.

2.3 Users

Each person who wants to use the computer is given a User ID and is called a User. Users log onto n/STAR by entering their User ID (and an optional password, if specified).

There is no practical limit to the number of User IDs that can be set up on a given system. An eight-user system may have, for example, 40 User IDs (or more) if necessary; however, only one User per Application Processor may log on at any given time.

2.4 User Profile

Each User has a User Profile which contains information on which Volumes that User can access. In addition, the User Profile defines the User Password (entered when logging on), the printer to be used, and an initial command, which can be used to automatically run a program after logging on.

2.5 Work Areas

Each User has 16 work areas (also called logical assignments, user drives, and other names). A work area is represented by a letter followed by a colon from A: through P:, and is indicated by the n/STAR prompt (that is, when your screen displays B>, you are in your B work area.

You or your system administrator can assign a Volume to each work area. You can then access (create, read, modify, rename, copy, erase) files in the Volume assigned to that work area.

2.6 Relationship Between Files, Volumes, and User

Your system administrator creates Volumes and Users as necessary. You or your system administrator then assigns Volumes to one or more of your work areas.

If you think of a work area as a conceptual diskette drive, assigning a Volume to a work area is equivalent to inserting a diskette in a diskette drive. Whatever files are on that diskette (or in that Volume) are now accessible when that diskette drive (or work area) is accessed.

The difference between Volumes and diskettes is that many Users can assign the same Volume to any or all of their work areas simultaneously, while diskettes are usually single-user devices. The act of assigning a Volume does not duplicate information, it merely creates a logical path to the area of the hard disk which is set aside as that Volume, so that the computer knows where to find the desired information.

For example, if you assign a Volume named PERSONAL to your A:, C:, and L: work areas, you could access any of the files in that Volume by accessing your A:, C:, or L: work area.

In this way, you can share information with other Users on the system. You can assign your coworker's Volume to, say, your B: work area, and your coworker can assign one of your Volumes to his B: work area. Then you can access his files by accessing your B: work area, and he can access your files by accessing his B: work area. You can copy files from his Volume to your Volume by copying from your B: work area to the work area which has your Volume assigned.

More commonly, however, you will want to keep most of your information completely separate from your coworkers. To accomplish this, have your system administrator create one or more private Volumes for you, plus a Volume to be used only for those file you want to share with others. Then, all Users who want to share files can assign this "public" Volume. There are many other ways to assign Volumes to accomplish other objectives.

The methods for assigning Volumes to your User Profile are covered later.

2.7 Diskette Access - A Special Case

Your computer comes with a Volume called FLOPPY (or FLOPPY9S, FLOPPY8S, or FLOPPYD, depending upon model) already on the hard disk. Whenever you assign one of these FLOPPY Volumes to one of your work areas, accessing that work area actually accesses the diskette in the diskette drive. (If no diskette is in the diskette drive, an error message is displayed.)

In a later chapter, you will learn how to copy files to and from diskettes. Essentially, the process involves assigning the Volume FLOPPY to one of your work areas, then telling n/STAR to copy a file to or from that work area, from or to one of your other work areas.

NOTES

Your system administrator may have renamed Volume FLOPPY or created other Volumes for accessing the diskette drive. If so, see your system administrator for the name of the Volume(s) for accessing the diskette drive.

Some systems have diskette drives which support multiple diskette formats, such as single-sided/single-density, double-sided/single-density, and so forth. See your system administrator for more information about these formats, if you need to use them.

2.8 Directory Search Feature

n/STAR has a directory search feature which provides a simple yet powerful method for finding programs and commands. But first, some background:

When you log on to n/STAR, your screen displays the n/STAR prompt for your A: work area, (unless you have an initial command, explained later in this manual). This prompt looks like this:

```
A>_
```

If you type a command such as DIR (which displays a directory of files), the command acts upon the Volume assigned to your A: work area. If you follow the command with another work area letter (DIR D:), a directory of the Volume assigned to your D: work area will display. You can change your work area as desired by typing its letter, a colon, and <RETURN> (C: <RETURN>, for example). The prompt then changes to:

```
C>_
```

Now, if you type the command DIR, the screen will display the files in the Volume assigned to your C: work area. This method of moving between work areas works well with built-in commands (those commands which are an inherent part of n/STAR).

However, to execute transient commands or programs (contained in actual files on your hard disk) a new problem arises: The system must know the work area in which the Volume containing the command is located to execute the command.

You can handle this problem manually in two ways:

1. You can copy all necessary programs and command files to every Volume in which you want to use them. This is not a very practical solution because it uses too much of your valuable disk space and requires that many files be copied every time a new Volume is created.

2. You can preface every command with the letter and colon of the work area to which the Volume containing the command is assigned. This is acceptable, but requires that every User know where every command file and program is located. For example, if you want to run a program called BEGIN which resides in the Volume assigned to your H: work area, you would type **H:BEGIN <RETURN>**. Another User may have this same Volume assigned to her L: work area, and would therefore execute the program by typing **L:BEGIN <RETURN>**.

Since both of these methods are rather clumsy, n/STAR provides another solution: a directory search feature. By using the directory search feature, you can make the system find a command or a program automatically.

The directory search feature searches for the command you type first in your current work area (the one indicated by your n/STAR prompt), and then in each sequential work area. The directory search feature only searches forward; if you are currently in your D: work area and enter a command that is in the Volume assigned to your A:, B:, or C: work area, the command file will not be found. If the command file is located in a Volume assigned to work areas D: through P:, the command file will be found and executed.

What if there are different commands or programs having the same file name located in different Volumes? n/STAR handles this problem by only searching for files which have their system attribute set. Any n/STAR file can have its system attribute set by entering a simple command (covered later in this manual).

In our example above, if your system had two different programs called BEGIN, you could set the system attribute of one of the programs, and assign the Volume in which it resides to one of your last work areas (O:, for example). Then, when whenever you type **BEGIN** from any work area (except P:), the program called BEGIN will be executed. However, if you are currently in the work area to which the Volume is assigned which contains your other BEGIN program, this other program will be executed instead (since the directory search feature searches first in your current work area).

n/STAR uses this directory search feature to make system commands easy to use. If your system was installed as recommended in the appropriate installation manual, you will have a Volume called USERSYS or SYSTEM assigned to your O: work area. (P: is generally reserved for assigning Volume FLOPPY so that it is searched last when looking for a file). The often used system commands have their system attribute set so that you can simply type the desired command from any work area (A: through O:) to execute the command.

The directory search feature is discussed in more detail later in this manual and in the n/STAR System Administrator's Guide. In most circumstances, your system administrator will set up system commands for you, but it is helpful if you (as a system user) understand how the feature works.

2.9 Protecting Your Data

A multiuser system such as the Molecular stores all users' data and programs in separate areas of the same hard disk (or set of hard disks). This creates a potential for others to read, modify, or even erase your data. To prevent such problems, n/STAR provides several levels of protection.

2.9.1 User Passwords

You may elect to have a User Password which must be entered to log on. If you keep this password a secret, only you can log on under your User ID.

Once you have logged on, you can see your User Profile only by again entering your User Password.

This first level of security functions best if every User has a password, because it not only prevents unauthorized persons from logging on, it also prevents authorized Users from discovering the names of Volumes (and Volume passwords) not assigned to them.

2.9.2 System Password

Your system administrator creates a System Password, which should be kept a closely-guarded secret. Ordinary Users without a need to know should not know the system password.

The system password must be entered to create, modify, or delete a User or a Volume, and to change other system configuration parameters.

This level of security keeps unauthorized persons from finding out the names of Volumes on the system, and also prevents them from creating new Volumes and User, or from modifying and deleting existing Users and Volumes.

2.9.3 Volume Passwords

Each Volume on the system may be given a read password and a write password, providing a high degree of system security.

If a Volume has a read password, you must know that password to assign the Volume to your User Profile. Then, once the Volume is assigned with the correct read password, you can only read (display, print, copy from, but not modify or erase) files in the Volume.

If the Volume has a write password, you must know that password to assign the Volume to your User Profile. Once the Volume is assigned with the correct write password, you have unlimited access to the files in the Volume, just as though it had no password.

This level of security is only useful if you also use the other levels, since the Volume names and Volume passwords assigned in your User Profile can be viewed by anyone who has access to your User Profile, and anyone can access your User Profile if you do not have a User Password, or if your system does not have a System Password.

2.9.4 Command Protection

Another method of protecting the integrity of the system is to limit availability of "dangerous" commands. Your Molecular system has a SYSTEM Volume which contains a number of commands which can compromise the security of the system. However, if your system was installed according to recommended procedures, most Users will instead have access to a Volume called USERSYS which contains only a subset of the command files in the SYSTEM Volume.

It is up to your system administrator to determine which commands and programs are to be made available to each User. (Typically, the SYSTEM Volume will be given password protection so that only certain Users can access the files it contains.)

2.10 File Locking

If two or more Users have the same Volume assigned to their User Profile (a desirable condition in many circumstances), and both Users try to modify the same file at the same time, the information in the file will end up in an unknown state. You will not be able to determine whether your changes have been made, the other User's changes have been made, or both. Some programs will completely destroy a file if it is opened by more than one User at the same time.

This condition could be disasterous in many applications, such as multiuser accounting programs, where many Users are updating the same master file, possibly at the same time. To prevent this undesirable condition, n/STAR provides file locking mechanisms that allow only one User to modify a file at any given time. There are three methods of file locking available within n/STAR: automatic file locking, CP/M file sharing, and enhanced file sharing.

(If you do not fully understand the information in this section, don't worry. This information is intended for system administrators and for those Users who need to understand how to set up [not merely to use] file locking.)

2.10.1 Secured and Unsecured Volumes

When creating a Volume, your system administrator designates either SECURED or UNSECURED mode for that Volume.

When a Volume is UNSECURED, no file locking takes place for any of the files in that Volume. Because UNSECURED mode allows two Users to update a record at the same time, programs residing in a UNSECURED Volume should have only single-user applications.

When a Volume is SECURED, file locking is enabled for all files in that Volume. SECURED mode should be used for any Volume containing programs that are designed for multiple users.

2.10.2 The File Lock Table

n/STAR reserves a portion of memory for use as a file lock table. When a Volume is set to SECURED, n/STAR makes an entry in the file lock table each time a program opens one of the files in that Volume. When the program closes the file, the entry is removed from the lock table. n/STAR uses the information in the file lock table to provide file sharing for multiuser application programs.

Some CP/M programs must operate in UNSECURED mode, which means no entries are made in the file lock table for files in that Volume. You must use UNSECURED mode when:

1. The program opens files repeatedly without closing them. In this case, after using the system for awhile, the message

   FILE LOCK TABLE FULL

   will display. The file lock table is of limited size, and is used for the entire system. When it becomes full, it must be reduced in size by closing files.

2. The program continues to read from and write to a file after closing it.

If you get the FILE LOCK TABLE FULL error message, or if the program fails for unknown reasons, try running the program in an UNSECURED Volume. This is a safe procedure if you ensure that only one User accesses the program at any given time.

2.10.3 Automatic File Locking

Automatic file locking is the default condition used (assuming the Volume is SECURED).

When automatic file locking is instated, the first User to open a file locks it (makes an entry in the file lock table). Anyone who then tries to access the file (read or write) before the file is closed is denied access and is issued the following error message:

```
BDOS ERROR ON d:  FILE IN USE
FUNCTION nn FILE file name
```

where:

d	is the work area to which the Volume is assigned which contains the locked file.
nn	is the number of the function being performed (as described in the n/STAR Programmer's Guide.
file name	is the name of the locked file.

IMPORTANT NOTE

Multiuser overlay files (those accessed by more than one program or User at the same time) must be have their READ ONLY (R/O) attribute set, or they will cause the error just described when a second read operation is attempted.

To set the READ ONLY attribute for a file, type **SET file name $R/O <RETURN>**.

2.10.4 CP/M File Sharing

CP/M file sharing allows Users with existing CP/M applications not having file or record locking mechanisms to take advantage of n/STAR's file sharing capabilities. (A record is an individual element of a file which can be read or written -- and thus modified -- independently.)

To establish CP/M file sharing, the participating files must have their SHARE attribute set (**SET file name $SHR <RETURN>**).

When a program requests access to a participating file, an entry is created in the lock table. This entry indicates that the file is to be shared, and that the automatic record locking mechanism is to be invoked.

If a program attempts to read a record already locked by another User, the system automatically holds the request until the first User either:

1. Reads a different record.
2. Writes (updates) a record in the same file.
3. Closes the file.

There are several assumptions and limitations which must be considered when implementing CP/M file sharing with existing CP/M application programs:

1. It is assumed that a program must read a record before writing it. Because automatic record locking only takes place on a read operation, applications which write records before reading them should not be used in SHARE mode. Records that are added to the end of a file will not be locked by the write operation but will be locked on any subsequent reads.

2. Application programs which close files and then continue to read and/or write records will encounter errors on such read or write attempts. Files must be opened and closed properly for automatic record locking to function. A file attribute called PARTIAL CLOSE ($PCL) may be set for files that are processed by application programs which do not follow this rule. When the PARTIAL CLOSE attribute is set, a close request from an application program performs all normal file close operations, retain the file lock entries, and allow subsequent reads and writes.

3. Programs using indexed files may cause large portions of the file to be locked at a given time. When an index record is read, other Users will be unable to read that index record, in addition to all data records under the control of the index record, until another index record is read, or until the index record is rewritten, or until the index file is closed.

CP/M file sharing works well so long as you adhere to the considerations outlined in this section. We recommend that you use enhanced file sharing for applications designed to be used by multiple terminals against a common data base (which is typical of multiuser accounting packages).

Existing application programs which cannot be run efficiently under these restrictions can operate safely in a single-user environment by placing the files in an UNSECURED Volume. When files residing in an UNSECURED Volume are accessed, no file locking takes place. All other capabilities (such as READ ONLY) are maintained.

2.10.5 Enhanced File Sharing

Enhanced file sharing is for application programs specifically designed to lock and unlock records within n/STAR. The application program establishes enhanced file sharing by executing commands which open a file in UNLOCKED mode. This allows multiple Users to access the file at the same time. It is then the responsibility of the application program to control locking and unlocking of records as necessary.

The system commands required to open files unlocked, and to lock and unlock records are beyond the scope of this manual, but are covered in detail in the n/STAR Programmer's Guide.

2.11 Summary

n/STAR is a disk operating system specifically designed to take advantage of the Molecular computer's multiprocessor, multiuser capabilities. It provides an easy-to-use environment for the casual user, and high-level capabilities for the program developer.

In this chapter, you learned how n/STAR provides Users, Volumes, and a comprehensive security system. To summarize n/STAR's operations in just a few steps:

1. Your system administrator sets up n/STAR Volumes and n/STAR Users on the hard disk(s).

2. Each User has a User Profile which provides 16 work areas.

3. Any existing Volume can be assigned to any User's work area. Assigning a Volume to a work area is conceptually equivalent to inserting a diskette into a diskette drive. It makes the files within that Volume available to the User.

4. The diskette drive can be used by assigning a special Volume (usually called FLOPPY) to one of a User's work areas.

5. Program and command files can be found by using a directory search feature which locates files which have their system attribute set. The search is conducted forward only from the current work area.

6. Passwords may be assigned to Users, to the system maintenance program, and to Volumes. Volume passwords can restrict all access, or can allow reading only from files in the Volume.

7. File locking may be established to prevent multiple Users from modifying the same file or record at the same time.

The next chapter discusses the various methods for storing data.

Chapter 3. Information Storage

All computer systems must have some place to store information (data), both temporarily (while you are working) and permanently (even after the power is shut off). Molecular computers have several data storage methods, each used for a different purpose.

3.1 Application Processor Memory

First, your Application Processor has an electronic memory area call RAM (which stands for Random Access Memory). In a standard Application Processor, this memory holds about 64,000 characters (bytes) of information and programs. The problem, however, is that when you exit from a particular program, or when you log off or turn off the computer power, whatever was stored in this memory is lost.

3.2 Hard Disk Drive

To solve this problem of power-dependent memory, and to allow you to do many things with the memory available to you, the system has one or more hard disk drives.

A disk drive is a unit which contains one or more magnetic disks (not unlike records on a turntable). Using magnetic recording techniques, data is stored on the disks as they spin past a recording/playback (write/read) head. Data is retrieved from the disk in the same manner, as needed by each Application Processor. Again, this complicated operation is automatic -- you need not understand it to use a computer, bit it helps to understand the concept.

Disk drives come in several types. The primary storage in your system is a hard disk drive (also called a Winchester-technology drive, a fixed disk drive, or simply a disk drive). The characteristics of this type of disk drive are that the rotating disks are rigid (not flexible), and that they are sealed in the drive unit -- they cannot be removed.

3.3 Diskette Drive

Your system also has one diskette drive (also called a floppy drive, a floppy diskette drive, or a flexible-disk drive). Data is stored in the same way on a diskette as on the hard disk.

The primary differences between the two are: speed (the hard disk drive is about ten times faster than the diskette at storing and retrieving information), and storage capacity (the hard disk can store 20 to hundreds of times more information than a diskette).

The important characteristic of the diskette is that it is removable. This allows you to put data or programs on a diskette and take them to another computer, and to back up stored information (a process which your system administrator must perform regularly, just in case something goes wrong with the computer).

3.4 File Processor Memory

The File Processor in your system ties together all the separate Application Processors, and lets them communicate and share the computer's system resources (such as disk drives). The File Processor has its own electronic memory, very similar to that on each Application Processor, although on most systems there is much more memory on the File Processor than on an Application Processor.

The memory on the File Processor is used to temporarily store data on its way to and from the various Application Processors, and to store certain parts of n/STAR and other application programs.

3.5 Tape Drive (Option)

Some systems have an optional tape drive which is used as a backup device. It is used by your system administrator (instead of diskettes) to make a backup copy of all the information you and other users have stored on the hard disk.

3.6 Summary

Information storage is an important part of any computer system. The Molecular provides a generous amount of semiconductor memory for each user, and disk storage space for all users.

In this chapter, we discussed the provisions for information storage on the Molecular computer. There is electronic memory (RAM) on each Application Processor, RAM on the File Processor, and there is permanent storage space on the hard disk(s). Removeable storage is provided by diskettes and by an optional tape backup unit.

The next chapter describes n/STAR file naming conventions.

Chapter 4. n/STAR File Naming Conventions

A file must have a name, so that n/STAR can find it when you need it. n/STAR's file names are divided into two parts: a file name and a file type.

4.1 Filenames

n/STAR has certain restrictions on the way you can name files. A file name can be up to eight characters long. These characters may be any alphanumeric or symbol characters; however, the following should normally be avoided, as they can cause problems under certain conditions:

Illegal File Naming Characters

```
<
>
.
,
;
:
=
?
*
[
]
_
%
|
(
)
/
\
```

Any character not listed may be used in a file name.

4.2 File Type

The next rule for a file name is that it can have an optional file type description of up to three characters, separated from the file name by a period (".":

<filename>.<typ>

where <filename> is a file name of up to eight characters, and <typ> is a file type description of up to three characters.

For file type descriptions, the same rules apply about which characters are not allowed. Here are some examples of legal and illegal file names:

Legal File Names	Illegal File Names
CHAPTER1.TXT	CHAPTS1,2.DOC
CHAP2B.DOC	AC?OUNT.*
ACCOUNT.BAS	FRED....
@FRED.123	MENU::.===
1DAY	EFFECTIVE
!	[STOP].COM

A file type description is generally used to remind you what kind of file you are using, and there are some common file type descriptions already in use:

Commonly Used File Types

BAK	Backup file created by a word processor or spreadsheet program
COM	Command file (a file that can be executed by the computer)
OVL, OVR	Program overlay file
$$$	Temporary file
TXT	Common designation for files containing text
SPL	File intended for print spool queue
SUB	File containing a series of instructions to be executed sequentially by the SUBMIT command
DOC	Common designation for files containing text created by a word processing program
MDL	Menu source code for MenuMaster
MEN	Menu programs created by MenuMaster
DAT	Common designation for files containing data to be used by a program
LIB	Common designation for a file containing other files (a library file)

When you are instructed to enter a file name, use any file name and file type description you like, so long as it follows the conventions just described. You should use file names that mean something to you, so that you can later remember what a file contains just by seeing its name. You should avoid using the file type descriptions listed above, unless one of them applies to your file. You will get a better idea of how file names are used in later chapters.

One final note on file names. A complete file name consists of a work area, followed by the filename, followed by the typ, for example:

B:LETTER.TXT

A:MENU.DOC

O:STAT.COM

You may omit the work area prefix and colon if you are specifying a file in your current work area. However, for n/STAR to locate the specified file in another work area, you must use the work area prefix and colon.

4.3 Wildcards

When specifying a file name, you are often allowed to use wildcards, which specify a group of files on which to act. For example, you can use wildcards to erase all files which start with a certain letter, or to copy all files from a given work area, without a need to specify each individual file name.

There are two wildcards: ? and *.

You can use a question mark (?) to indicate that any character in the position of the question mark is acceptable. For example, to erase the files CHAPTER1.DOC, CHAPTER2.DOC, CHAPTER3.DOC, and CHAPTER4.DOC, you could enter each individual file name. Using the ? wildcard, you could instead enter **CHAPTER?.DOC**. This would erase all files which any character following CHAPTER which also have the file type DOC.

You can use the question mark in another way. If you want to erase all one, two, and three character file names which have the extension BAK, you could enter **???.BAK**. Any file name of more than three characters would not be erased.

Wildcards can also be used in the file type. To specify the files MEMO.DOC, MEMO.DAN, and MEMO.DOG, you could enter **MEMO.D??**

The asterisk (*) wildcard matches all characters on one side of the period which separates the file name from the file type. For example, to specify all files which end with the file type BAK, you could enter ***.BAK**

To specify all files not having a file type, enter *. To specify all files, enter ***.***. (This, by the way, is equivalent to entering ????????.???.)

4.4 Summary

File names are used to tell n/STAR which file you want to open, modify, rename, copy, delete, or close. Like any operating system, n/STAR has rules for the characters and symbols you can use in a file name.

In this chapter, you learned that an n/STAR file name can consist of up to eight characters, and optionally, a period and a three character file type. There are certain characters you should avoid when you are naming files; these can cause conflicts with other system commands. There are certain conventions used when giving file types; these help to identify the type of file with which you are dealing. This chapter also presented the concept of wildcards and gave some examples on using them.

The next chapter explains how printing is accomplished under n/STAR.

Chapter 5. An Overview of Printing on the Molecular

There are various ways to print when using n/STAR, depending upon how your system is set up and upon how you want to print a file. This section describes how printing is accomplished on your Molecualr system.

5.1 Printing Modes

n/STAR supports three different printing modes, all of which may be used on your system, depending upon how your system administrator set up the printer(s).

5.1.1 Local Printers

Each user's Application Processor has a connector for a local printer. If there is a printer connected directly to the same Application Processor as your terminal, it is a local printer and can only be used by the person working at your terminal.

The advantage of a local printer is that only the person using your terminal (ideally, you) can use the printer; therefore, you never need wait for someone else's printing to complete before your file is printed. Also, you have a high degree of control over the printer, which lets you, for example, pause the printer at a desired point and change printing elements for a different type style (provided you application program allows this).

The disadvantages are that many (expensive) printers are required for the total system, and that under most circumstances, you will have to wait for one file to be printed before you can begin working on something else.

5.1.2 System Printer

Your system may have one printer connected to the PRINTER connector of the File Processor (on the rear panel of the computer) so that it can be shared by all users. If this is so, you must wait until no one else is printing, then give a command to start your file printing.

A system printer has the advantage of retaining the control of a local printer, while sharing an expensive peripheral among many users. It has the disadvantage of first making you wait to start printing, then making you wait for your job to finish printing before letting you work on something else.

Another disadvantage of a system printer is that a user acquires the printer when he begins printing; he then "owns" the printer and must enter a specific comand to release it (or must log off) before any other user can use the printer.

A system printer is usually a good choice when a small number of users all work in the same room and so can communicate easily about who is using the printer at any given time.

5.1.3 Despooling Printers

A more practical solution to printing on a multiuser system is to have some automatic means whereby files are placed in a waiting line of jobs to be printed, then printed in their turn. n/STAR provides such a feature; it is called a despooling printer. (A despooling printer is actually just part of the system, which includes a software spooler, a series of commands, and the computer hardware itself.)

To set up a despooling printer, you must install an "extra" Application Processor. This is an ordinary Application Processor which is configured within n/STAR to support either one or two despooling printers (one connected to the terminal connector, one connected to the printer connector. You can have as many despooling printers on your system as you have slots available for Application Processors.

If your system is using despooling printers, you can use any despooling printer available. You may have some printers which print characters formed of dots (dot-matrix printers), and you may have some printers that print fully-formed characters like a typewriter (letter-quality printers). Each despooling printer has a name, which you can learn from your system administrator. Instructions for installing despooling printers can be found in the applicable Molecular computer installation manual. Additional information can be found in the n/STAR System Administrator's Guide.

When you give the command to print a file, n/STAR first creates a disk file (exactly like any other file, except for its name). This is called a spool file. If you are running applications software such as the WordStar word processing, the software thinks it is printing, when actually it is creating a disk spool file.

After this spooling is complete, you queue the spool file; that is, enter a command to place it at the end of a waiting line (a queue) of print requests from other users. When all other printing requests ahead of yours have printed, yours reaches the beginning of the queue and is printed. When the file is just ready to begin printing, it is despooled to the specified printer; hence, the name despooling printer.

The advantages of having despooling printers on your system are that one printer can serve the needs of many (if not all) system users, and that, after the file is spooled (which takes far less time than actual printing), you can proceed to perform other tasks. The actual printing is handled by other system components, leaving your Application Processor free to serve you while the actual printing takes place.

The disadvantages are that you give up some control of the printer. You cannot, for example, pause the printer to change print elements in the middle of a printing job. Also, you must buy at least one more Application Processor -- a small price to pay for the convenience gained.

5.2 Summary

There are three methods of printing under n/STAR. If you wish, you can have a printer connected to you Application Processor. This is called a local printer, because it can only be accessed from the terminal connected to the same Application Processor.

Another method is to connect the printer to the PRINTER connector of the File Processor. This is known as a system printer, because it is a system resource which can be accesed by any user, but only when other users are not using the printer.

For most situations, the best method is to use despooling printers, which are connected to separate Application Processors (two per Application Processor). When using a despooling printer, you first spool the file to be printed, then n/STAR automatically despools it when its turn to print comes up.

More information on using printers is presented later in this manual. Information on setting up printers can be found in the applicable Molecular computer installation manual. Information on configuring an Application Processor for despooling can be found in the n/STAR System Administrator's Guide.

This is the end of Part I and your introduction to the n/STAR operating system. You may want to go back and reread these chapters again to be sure you have a thorough understanding of how n/STAR works, since understanding is the only way to derive the maximum benefit from any tool.

Part II describes how to use n/STAR to get results.

Part II. Using n/STAR

NOTE

This part of the manual explains functions that are supported by n/STAR and CP/M. In many cases, it is up to your system administrator to give you access to the command files to perform these functions. If a command file is not available to you, the command will not work.

Chapter 6. Logging On and Off

This chapter explains how to log on and how to log off. It assumes that you have a correctly installed system and that you have already turned it on.

6.1 Your User ID

Before you can perform any functions with your Molecular computer, you need a User ID and, optionally, a password. These are assigned by your system administrator. If you do not yet have a User ID (usually your first or last name, or some other easy-to-remember word), see your system administrator now. If you are assigned a User Password, be sure to either make a clear mental note of it, or write it down and put it in a safe place.

6.2 Logging On

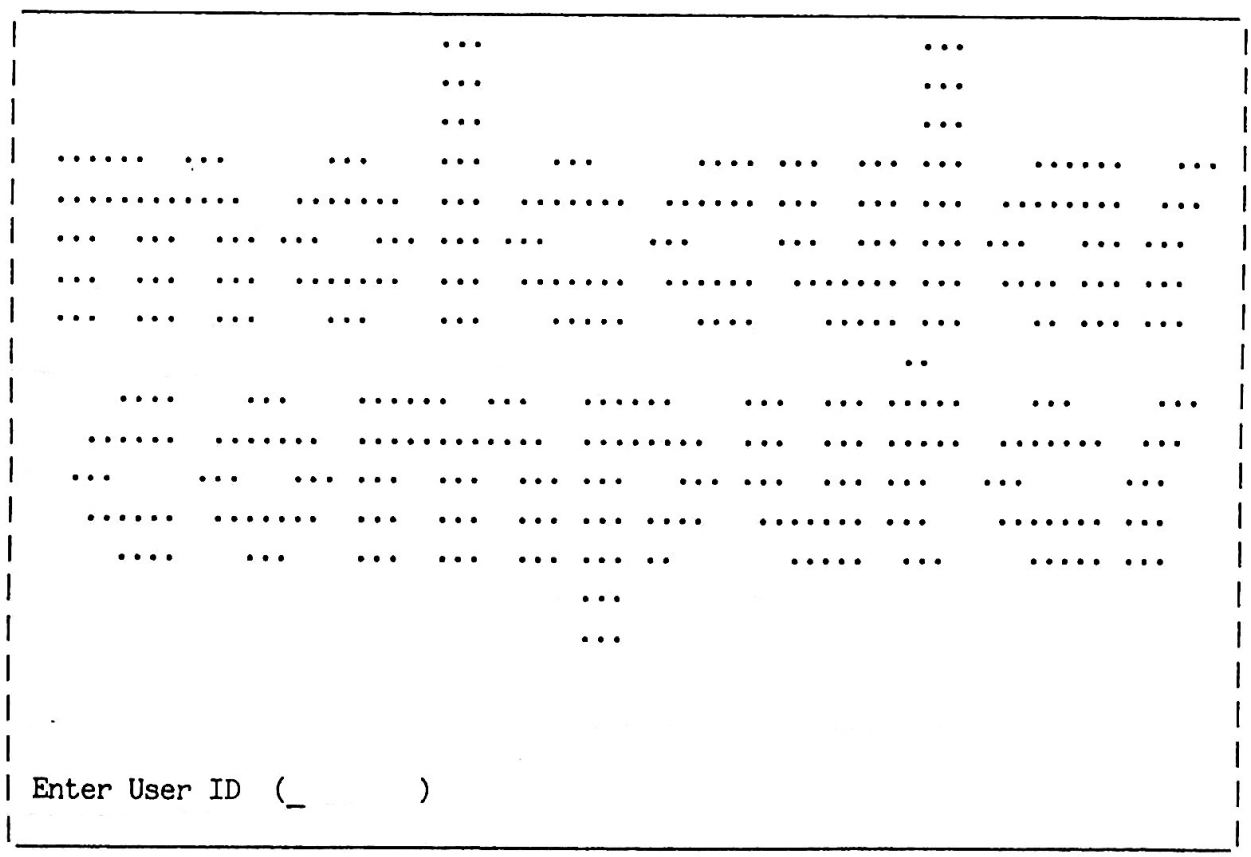
To begin to use n/STAR, you must first tell the computer who you are. You do this by logging on.

6.2.1 Turning On the Terminal

When you sit down at your terminal to begin work, the first thing you must do is turn it on. The power switch is usually located on the front of the terminal, near the display screen, and is combined with a contrast control that controls the apparent brightness of the screen. Sometimes, it is located on the back of the terminal, near the power cord.

6.2.2 The Logged-Off Screen

A few moments after turning on the power, the cursor should appear in the top left corner of your screen. Press the **RETURN** key and the logged-off screen will appear:



Note that your system administrator may have customized this display (which is supplied with your Molecular system) to supply different or additional information. However, even if the logged-off screen has been changed, the words

```
Enter User ID  (_        )
```

should still be part of the display. If you do not see these words, see your system administrator. (The short line in this display -- and throughout this manual -- indicates the position of the cursor.)

6.2.3 Entering Your User ID

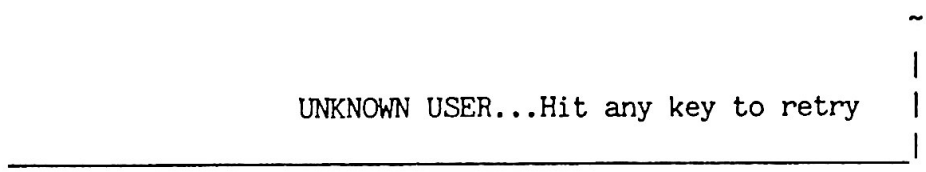
Once the logged-off screen is displayed, you log on by entering your User ID and pressing the RETURN key. For example, if your User ID is Jane, you would type

```
~
|
|Enter User ID  (JANE_    )
|_____________________________________________
```

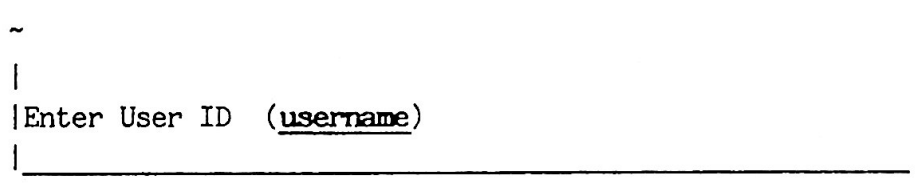
and then press <RETURN>. Note that throughout this manual, entries you are to make are shown in **bold-face type**, while responses the system makes are usually shown in standard, light-face type. In any case, the text displayed by the system will be easily distinguishable from the text you are to enter. (Unless otherwise noted, you may use upper- or lower-case letters, or any combination thereof, when making entries to n/STAR. The entries are converted to upper-case automatically.) Try typing a non-existent User ID to see what happens. Type

```
~
|
|Enter User ID  (PIZZA_   )
|_____________________________________________
```

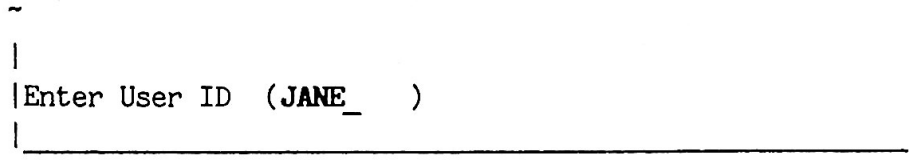
and then press **<RETURN>** (or use some other, non-existent User ID). The screen displays



Press any key, and the logged-off screen again displays. Now, enter a valid User ID (the one assigned to you by your system administrator):



and press **<RETURN>**. Note that throughout this manual, whenever we cannot determine the response you will make, a word describing your response is underlined. In these cases, don't type the descriptive word, enter the appropriate response. For example, if your User ID is Jane, you would enter



and press **<RETURN>**. If you make a mistake while typing, press the **<RUBOUT>**, **<DEL>**, **<BACKSPACE>**, or **<left arrow>** key, depending upon your terminal. This will move the cursor back so that you can correct your mistake by typing over it.

6.2.4 Entering Your Password (Optional)

If you were also assigned a User Password when your system administrator set up your User ID, the screen displays

```
~
|
|Enter Password  (_        )
|_____________________________________________
```

Type your User Password, then press **<RETURN>**. Note that although the cursor moves as you type, nothing is displayed. This prevents someone from seeing your Password while looking over your shoulder. If you make a mistake, or enter the wrong password, the screen will display

```
                                                    ~
                                                    |
                INCORRECT PASSWORD...Hit any key to retry   |
                                                    |
____________________________________________________|
```

Press any key, and the logged-off screen again displays. You must start over and reenter your User ID and User Password.

6.2.5 n/STAR Startup Screen

If you do not have an initial command, your screen will look like this after your User ID and User Password are accepted:

```
_____________________________________________
|- n / S T A R -
|
|(c) 1984 Molecular Computer
|
|64K Z80   Vn.nnn    UNIT = 237   USER = JANE
|
|A>
|
|
```

Note that the information in this display will differ, depending upon which terminal you are using, your username, and so forth. When the n/STAR A> prompt displays, the system is ready to accept a command.

6.3 Entering a Simple Command

Let's try out n/STAR by entering a few simple commands, to give you the "feel" of the system. Go through each of the following steps exactly as directed, and note how the system responds:

1. Type **O:<RETURN>**

   The n/STAR prompt will change from A> to O>.

2. Type **DIR <RETURN>**

   A listing of files in the Volume assigned to your O: work area will display. (The Volume should be either the SYSTEM Volume or the USERSYS Volume, depending upon how your system was installed.) At tkhe end of the listing, the O> prompt will again display, indicating that the system is ready to accept another command.

3. Type **TYPE MESSAGE.SYS <RETURN>**

   Your screen will display the contents of the file which contains the logged-off screen. (The top part of the file may scroll off the top of the screen before the entire file finishes displaying -- this is normal.) At then end of the display, the O> prompt will again appear.

4. Type **A:<RETURN>**

   The A> prompt will again display.

5. Type **TYPE MESSAGE.SYS <RETURN>**

   The screen will display

```
|
|MESSAGE.SYS?
|
|A>
|_____________________________________________
```

   because the file MESSAGE.SYS is in the Volume assigned to your O: work area, and is not in the Volume assigned to your A: work area, and does not have its system attribute set.

6.4 Logging Off

When you are finished using the computer, you should log off. This will prevent others from using the computer under your User ID, increasing system security. To log off, type

LOGOFF <RETURN>

The logged-off screen will display, with the "Enter User ID" prompt. Note that it does not matter which work area you are using, since the command file LOGOFF.COM is located in the SYSTEM or USERSYS Volume assigned to your O: work area, and has its system attribute set. (If you are in your P: work area, you must type **O:LOGOFF <RETURN>**.)

6.5 Summary

In this chapter you learned how to log on using the User ID and optional password assigned by your system administrator. You also entered a few simple commands to give you the "feel" of the system. Finally, you learned how to log off, causing the logged-off screen once again to be displayed.

In the next chapter, you will learn how to set and check the system time of day (day and date).

Chapter 7. Setting and Checking the Time of Day

This chapter explains how to set and check the system time of day, which is actually the current date and time. Many application programs require either the correct date, the correct time, or both to function correctly. When you log on, you should check the time of day clock, and if it is incorrect, you should set it to the correct date and time.

7.1 Checking the Time of Day

To check the time of day (the current date and time) type

```
A>TOD <RETURN>
```

The screen displays the current date and time. For example:

```
MON 8/13/84 13:39:43

A>
```

This display indicates that it is Monday, August 13, 1984, approximately 1:40 PM. (The time is shown in 24-hour format, so that AM/PM indication is unnecessary.)

7.2 Setting the Time of Day

If the time shown is incorrect (by more than a few minutes), you should reset it. To reset the time of day, type

A>TOD <mm>/<dd>/<yy> <hh>:<mm> <RETURN>

where:

<mm> is the current month (a number from 1 to 12)

<dd> is the day of the month (a number from 1 to 31)

<yy> is the last two digits of the current year (a number from 00 to 99 which indicates the years 1978 to 2077 [which means 00 indicates the year 2000, not 1900])

<hh> is the hour (a number from 0 [for 12 Midnight] to 23 [for 11 PM])

<mm> is the minutes (a number from 0 to 59)

You must type a slash (/) between the month and day, and between the day and year. You must leave a space between the date and the time. You must type a colon between the hours and the minutes.

For example, let's assume that it is February 3, 1984, and the time is 9:30 AM. To enter this date and time, type

A>TOD 2/3/83 9:30 <RETURN>

When you press <RETURN>, the screen displays

```
|
|
| STRIKE ANY KEY TO SET TIME
|
```

You can synchronize the clock, if desired, by waiting for the exact minute to start before starting the system clock. When you are ready, press any key. The system displays the current date and time, including the day of the week (which is calculated automatically):

```
FRI 2/3/84 9:30:00

A>
```

7.3 Summary

In this chapter, you learned how to check the system clock and how to set the date and time to their correct values. The correct date and/or time is important to many application programs.

The next chapter explains how to make Volume assignments, how to list files in your work area, and how to change work areas.

Chapter 8. Manipulating Your Work Areas

This chapter explains how to perform the following functions:

- List a directory of files in the Volumes assigned to your work areas
- Change from one work area to another
- View the Volumes assigned to your work areas
- Change the Volumes assigned to your work areas

8.1 Listing a Directory of Files

There are three commands which will display a directory of files in your work area. They are DIR, D, and STAT. The command you should use depends upon the type of information you need.

8.1.1 Listing a Simple Directory of Files

To display a simple directory of files in a work area, use the DIR command. Type

DIR <RETURN>

and a list of file names will display. Here is a typical directory display:

```
|A: CHAPTER1  DOC : WS       COM : MLIB      PRM : MEMO1     TXT
|A: MEMO2     TXT : NOTES        : SCHEDULE  DOC : CHAPTER1  BAK
|A: SCHEDULE  BAK
|
~
```

Note that the work area letter displays in the first column of the listing, and that the period which separates the file name from the file type is replaced by one or more spaces. There is no particular order to this listing of file names, and no other information is available from this display.

You can obtain a directory display of selected files by specifying the file name. Wildcards can be used here. For example, to determine whether a paricular file named BOB.DOC exists in the Volume assigned to your work area, you could type

DIR BOB.DOC <RETURN>

or

DIR *.DOC <RETURN>

or

DIR ???.DOC <RETURN>

You can obtain a directory display of another work area by supplying the work area letter and colon. For example, to see a list of all file names in the Volume assigned to your G: work area, you would enter

DIR G: <RETURN>

Note that any files with their system attribute set are not displayed. The system attribute hides them from this directory display. To display system files, you must append a **<SPACE> S** to the DIR command as follows:

DIR *.* S <RETURN>

A wildcard is supplied to list all system files. a file name must be specified here as a place holder, since entering DIR S <RETURN> would display the directory entry for a file with the name S.

8.1.2 Listing a Directory with Statistics

The STAT command lists a directory which is sorted alphabetically and contains some valuable statistics. There are several ways to use the STAT command for various purposes, including setting some of the file attributes. These uses are explained in detail in the CP/M Operating System Manual. This section deals only with the directory display function.

To obtain a directory display with statistics, type

STAT *.* <RETURN>

The resulting display shows the number or records in the file, the number of bytes the file occupies on your hard disk, the number of extents, the status of the READ ONLY flag, and the file name. If the system attribute of a file is set, that file name is enclosed in parentheses. In addition, the amount of disk space remaining on the entire partition in which the Volume exists is displayed. A typical display follows:

```
|
|Recs  Bytes  Ext Acc
|  15     4k    1 R/W A:MEMO1.TXT
| 450    60k    2 R/O A:WORK.LIB
|   1     4k    1 R/W A:(WI.COM)
|Bytes Remaining on A: 2430k
|
|A>_
|_____________________________________________________
```

The same rules apply here as presented when we covered the DIR command: You can specify an individual file name, you can use wildcards, and you can supply another work area as part of the STAT command to list statitics of files in another Volume.

8.1.3 Listing a Directory Showing Attributes

To display an alphabetically-sorted directory of files which also shows all file attributes, as well as the actual size of the file (not the amount of disk space it occupies, which is always a whole number of blocks comprising enough disk space to contain the file) use the D command. Type

D <RETURN>

Your screen will display a list of files with their actual size, and several columns showing any file attributes which are set. A typical display follows:

```
~
|
|BEGIN    COM    47K     PCL   R/O         ARC
|BOB      DOC    14K
|MEMO     TXT     3K
|WS       COM    16K                SYS
|
|_____________________________________________________
```

Again, you can specify a work area letter with the command, and/or a file name (including wildcards).

8.2 Changing To a Different Work Area

As previously mentioned, when you log on, you are brought into n/STAR in your A: work area (unless an initial command is executed during logon). There will be times when you want to work directly in another work area (in fact, some application programs require that your "logged" or current work area be the same as the work area which contains the application program itself.

To change to another work area, simply enter the letter of the desired work area, followed by a letter, followed by <RETURN>. For example, to change to your B: work area, type

```
B:<RETURN>
```

The n/STAR prompt then changes to indicate your current work area:

```
B>
```

If there is no Volume assigned to the designated work area (or if an invalid Volume name is assigned, or if the wrong Volume read or write password was specified when the Volume was assigned) the following error message is displayed:

```
~
|
|Bdos Error On n: Select
|Function 14
|_____________________________________________
```

where n is the work area letter designated in the command to change work areas. To return to the n/STAR prompt of the original work area, press any key.

If you specify the work area to which the Volume FLOPPY (or equivalent) is assigned, and no diskette is inserted in the diskette drive, the following error message is displayed:

```
~
|
|Bdos Error On n: Bad Sector
|Function 14
|_____________________________________________________
```

Pressing any key displays the prompt of the work area specified in the command to change work areas (n:). At this point, you may insert a diskette, or you can enter another work area to which to change.

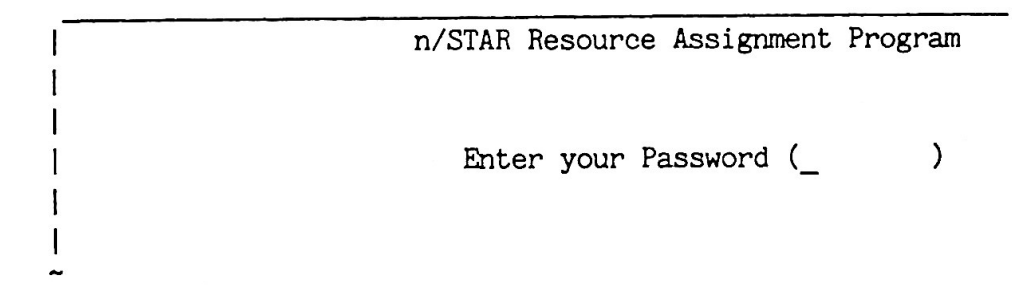
8.3 Viewing Volumes Assigned to Your Work Areas

Often, you will need to know which Volumes are assigned to your work areas, so that you know which work area you need to use.

To display your User Profile (which lists the Volumes assigned to each work area), type

ASSIGN <RETURN>

The screen clears. If you have a User Password, the screen displays:



If this screen displays, enter your Password, then press **<RETURN>**. The screen then displays your User Profile. A typical User Profile might look like this:

```
|                    n/STAR System Maintenance Program                    |
|                                                                         |
|                         Profile of user JACK                            |
|                                                                         |
|PASSWORD    PW:=BIRTHDAY                                                 |
|                                                                         |
|LOGICAL ASSIGNMENTS                                                      |
|                                                                         |
|A:=JACK     ;SECRET     I:=         ;          LST:=LOCAL               |
|B:=DOCS     ;           J:=WRDPROC  ;                                   |
|C:=SHARED   ;           K:=         ;                                   |
|D:=SCRATCH  ;           L:=         ;                                   |
|E:=GAMES    ;FUN        M:=NEWMAIL  ;                                   |
|F:=         ;           N:=MMAIL    ;                                   |
|G:=         ;           O:=SYSTEM   ;                                   |
|H:=         ;           P:=FLOPPY   ;                                   |
|                                                                         |
|INITIAL COMMAND                                                          |
|                                                                         |
|CMD:=                                                                    |
|                                                                         |
|ENTER COMMAND (_                                          )              |
|_________________________________________________________________________|
```

Each of the letters indicates a work area (called a "logical assignment" in this display). Characters following the equals signs are the Volumes assigned to each of the work areas. Characters following the semicolon (;) are the Volume read or write passwords (specified by the system administrator when creating the Volume, but assigned here to allow access to the Volume). Other items on this screen are explained later in this manual.

Press **<RETURN>** to exit from this display and return to the n/STAR prompt.

8.4 Changing Volumes Assigned to Your Work Areas

There will be times when you want to make a change to a Volume assigned to one of your work areas. There are two ways of accomplishing this, both using the ASSIGN command.

One method is to call up the User Profile as described in the previous section, and enter a command. The command format is

8.4.1 Assigning Volumes by Displaying the User Profile

n:=volume name;volume password

where:

n	is the work area to which you want to make a change
volume name	is the name of the Volume which you want to assign to the work area.
volume password	is the Volume read password or write password specified by your system administrator when the Volume was created.

For example, to assign the Volume GAMES to your G: work area, you would enter

G:=GAMES <RETURN>

If the Volume GAMES had the write password FUN, you would instead need to enter

G:=GAMES;FUN <RETURN>

If you specify the name of a Volume which does not exist, or if you fail to specify the correct password when one has been assigned to the Volume, the screen displays

```
~
|
|** WARNING ** invalid access **    vol: volume name
|
|Hit any key to continue
|_____________________________________________________
```

In this case, the Volume is assigned anyway. However, if you attempt to access the work are to which the Volume with invalid access is assigned, you will receive the error message

```
~
|
|Bdos Error On n: Select
|Function 14
|_____________________________________________________
```

8.4.2 Exiting from the ASSIGN Command

To exit from the User Profile displayed by the ASSIGN command, press **<RETURN>** without entering a command.

8.4.3 Assigning Volumes Without Displaying the User Profile

You can take a short cut when assigning Volumes, and not display the User Profile. To do this, use the ASSIGN command as follows:

ASSIGN n:=volume name;volume password <RETURN>

When the n/STAR prompt returns a few moments after entering the above command, the Volume is assigned. (No User Password is required to make changes using this method, since the User Profile is not displayed.)

8.4.4 Precautions when Assigning Volumes

You should observe the following precautions when making changes to your User Profile:

1. You must always have a valid Volume (and password, if applicable) assigned to your A: work area. If you try to assign an invalid Volume or if you "unassign" a Volume from your A: work area, n/STAR will display an error message and leave the assignment at its original value.

2. You must always have a valid Volume assigned to your current work area. For example, if you are using your G: work area (your prompt is G>), and you type **ASSIGN G:=<RETURN>**, the screen will display

   ```
   Bdos Error on G: Select
   Funtion 14
   ```

   and will continue to display this error message no matter what you type. You have locked yourself into a work area which has no Volume assigned. To recover from this error, press the **<BREAK>** key (or turn your terminal's power off and then on).

3. You should always keep the SYSTEM or USERSYS Volume (depending upon how your system was installed) assigned to your O: work area, so that you always have access to commands such as LOGOFF, STAT, D, and so forth.

8.5 Summary

In this chapter you learned how to manipulate your work areas and Volumes. You learned three different commands for displaying Volumes in your work area: DIR, STAT, and D. You also learned how to display the Volumes assigned to your work areas using the ASSIGN command.

Next, you learned how to use the ASSIGN command to change your Volume assignments. And finally, you learned a few precautions to observe when assigning Volumes.

The next chapter explains how to perform the other functions of the ASSIGN command, such as establishing and changing your User Password, changing your normal printer type, and establishing and changing your initial command.

Chapter 9. Establishing/Changing Your Password/Printer/Initial Command

This chapter explains how to use the ASSIGN command to establish and change your User Password, normal printer type, and initial command.

In all cases, you can use ASSIGN in two different ways:

1. You can type **ASSIGN <RETURN>** (and enter your password, if you have one) to display your User Profile and make changes by entering a command. To exit from the User Profile display, press **RETURN>** without entering any command.

2. You can type **ASSIGN command:=value <RETURN>**, where command is the command specified in the text and value is the value you want to assign to your User Profile.

9.1 Establishing/Changing Your User Password

To establish your User Password (if you do not have one), or to change your User Password, enter the following command

Method 1: **PW:=password <RETURN>**

Method 2: **ASSIGN PW:=password <RETURN>**

where password is the new password (up to eight characters) which you want to use. Be sure to assign a password that you can remember, because from now on, you must use the new password either to log on, or to display your User Profile with the ASSIGN command.

If you forget your password, you can have your system administrator find out what it is. Your system administrator can look at your User Profile using another command, and determine your User Password.

If you want to remove your User Password (so that you can log on without entering a password), type

Method 1: **PW:=<RETURN>**

Method 2: **ASSIGN PW:=<RETURN>**

9.2 Establishing/Changing Your Normal Printer

We have not yet discussed how to use printers, but since this chapter discusses how to use the ASSIGN command, it is appropriate to cover how to establish and change you normal printer here.

Chapter 5 described the various ways you can print under n/STAR. Part of your User Profile is used to establish which type of printing you will use.

To establish your normal printer (if your User Profile does not specify a printer), or to change it to another printer type, enter the following command:

Method 1: **LST:=**list device **<RETURN>**

Method 2: **ASSIGN LST:=**list device **<RETURN>**

where list device can be any of the following:

LOCAL
SYSTEM
SPOOL printer name

where: printer name is the name assigned by your system administrator to one of your system's despooling printers.

To remove a printer assignment from your User Profile altogether, enter the following command:

Method 1: **LST:=<RETURN>**

Method 2: **ASSIGN LST:=<RETURN>**

For example, to assign a local printer as your normal printer (the one which will be used whenever any application program instructs the system to print), you would enter

ASSIGN LST:=LOCAL <RETURN>

9.3 Establishing/Changing Your Initial Command

You can have an initial command which performs some function whenever you log on. For example, if you almost always do word processing whenever you use the computer, you could have an initial command which takes you into your word processor whenever you log on.

To establish an initial command (if you do not have one), or to change your initial command to another command, enter tkhe following command:

Method 1: **CMD:=**command **<RETURN>**

Method 2: **ASSIGN CMD:=**command **<RETURN>**

where command is the program call of the function you want to perform. For example, you could enter

ASSIGN CMD:=DIR O: <RETURN>

Then, whenever you log on, your terminal would display a directory of files in the Volume assigned to your O: work area. (Not a very useful feature, to be sure, but it illustrates how the command works.)

Another possibility is to use the initial command to take you to a different work area whenever you log on. For example, if you always work in your C: work area, you could enter

ASSIGN CMD:=C: <RETURN>

You can also use the initial command to perform a sequential series of commands by using the SUBMIT command, specifying a file which contains the desired series of commands. The use of the SUBMIT command is covered in detail in Chapter 13. To remove any initial command from your User Profile (so that you get the A> prompt immediately whenever you log on), enter

Method 1: **CMD:=<RETURN>**

Method 2: **ASSIGN CMD:=<RETURN>**

9.4 Summary

In this chapter, we looked at how to establish, change, and remove User Profile assignments for your User Password, normal printer, and initial command.

The next chapter describes how to copy, rename, display, and erase files.

Chapter 10. Manipulating Files Under n/STAR

(Copying, Renaming, Displaying, and Erasing Files)

n/STAR uses standard CP/M commands for copying, renaming, displaying, and erasing files. You can find a thorough explanation of all CP/M commands in the CP/M Operating System Manual included with your system. In this chapter, we will cover the following commands as they relate to performing the specific functions just mentioned:

- PIP
- REN
- TYPE
- ERA

10.1 Copying Files

The CP/M Peripheral Interchange Program (PIP) command can be used (among other things) for copying files. To copy a file, use the following command format:

PIP destination=source[options]

where destination is the work area, file name, and file type to which to copy, and source is the work area, file name, and file type from which to copy. [options] are letters which specify special features.

The best way to explain how to use the PIP command is to show examples with explanations.

10.1.1 Making a Copy of a File in the Same Work Area

To make a duplicate copy of a file in your current work area, you can omit the work area specification and simply supply file names. For example, to make a copy of the file CHAPTER1.DOC called CHAPTER1.DUP, enter

PIP CHAPTER1.DUP=CHAPTER1.DOC <RETURN>

This will copy everything in the source (CHAPTER1.DOC) to the destination (CHAPTER1.DUP).

10.1.2 Copying a File to Another Work Area

To copy a file from one work area to another, supply the desired work area letters with each file name. For example, to copy CHAPTER1.DOC from your the Volume assigned to your A: work are to the Volume assigned to your G: work area, enter

PIP G:CHAPTER1.DOC=A:CHAPTER1.DOC <RETURN>

This will copy the file to a new file of the same name in the specified work area. If you wish, you can omit the destination file name if it is to be the same as the source file name. For example, the following command performs the same function as the previous command:

PIP G:=A:CHAPTER1.DOC <RETURN>

You can also specify a different name for the destination, to rename the file at the same time as you copy it. For example

PIP G:OLDSTUFF.TXT=A:CHAPTER1.DOC <RETURN>

This copies the file named CHAPTER1.DOC in the Volume assigned to your A: work area to the file OLDSTUFF.TXT in the Volume assigned to your G: work area.

If you prefer, you can omit the work area specification of the current work area, if it is either the source or the destination. In the previous example, if you were currently in your A: work area, you could enter

```
PIP G:OLDSTUFF.TXT=CHAPTER1.DOC <RETURN>
```

Or, if you were currently in your G: work area, you could enter

```
PIP OLDSTUFF.TXT=A:CHAPTER1.DOC <RETURN>
```

In other words, whenever you omit the work area specification, n/STAR assumes the current work area.

10.1.3 PIP Command [options]

There are some useful options which you can specify when you are using the PIP command. Options are always specified at the end of the command, and must be enclosed in brackets -- []. The first bracket ([) must immediately follow the end of the command with no spaces.

Some of the options you can use are:

V Verify that data has been copies correctly You should get into the habit of always specifying V, just to be sure that files have copied correctly.

R Read files which have their system attribute set. If you try to copy a file which has its system attribute set and you do not specify this option, the file will not be found.

O Object file transfer, ignore <CTRL>-Z characters in the file. This options ensures correct transfer of object files (executable programs), and it does no harm to specify O during normal transfers, just to be sure everything is copied correctly.

N Number lines in destination file. You can make a copy of a document or a program source file and have its lines sequentially numbered for your reading convenience.

In addition to these options, there are several more with more limited use. They are covered in detail in the CP/M Operating System Manual. To use an option, specify it at the end of the PIP command. For example, to specify the V option in our previous example, type

```
PIP OLDSTUFF.TXT=A:CHAPTER1.DOC[V]<RETURN>
```

To specify multiple options, list them in any order within the same pair of brackets, as follows:

```
PIP OLDSTUFF.TXT=A:CHAPTER1.DOC[VOR]<RETURN>
```

is equivalent to

```
PIP OLDSTUFF.TXT=A:CHAPTER1.DOC[OVR]<RETURN>
```

It is a good habit to always specify these three options (O, V, and R) whenever you use the pip command. They ensure that your files will always be copied correctly.

10.1.4 Using Wildcards While Copying Files

You can copy a set of files by using wildcards. (Wildcards were explained in Chapter 4.) For example, to copy all files which end in the file type DOC from the Volume assigned to your D: work area to the Volume assigned to your F: work area, type

```
PIP F:=D:*.DOC[OVR] <RETURN>
```

Whenever you specify a wildcard, n/STAR displays a list of files being copied. For example, the above command might display a list like this:

```
~
|
|COPYING -
|LETTER.DOC
|CHAPTER1.DOC
|BOB.DOC
|WHATSUP.DOC
|_____________________________________________
```

10.2 Renaming Files

To rename files, n/STAR uses the CP/M REN command. The format for this command is similar to the format for the PIP command. The destination goes first, followed by the source. The work area for the destination (if specified) must be the same as the work area of the source.

To rename a file, specify the following command format:

REN destination=source <RETURN>

The REN command simply changes the name of the file; it does not make a copy.

For example, to rename the file BUDGET.CML to BUDGET.85, enter

REN BUDGET.85=BUDGET.CML <RETURN>

The REN command has no options.

10.3 Displaying the Contents of Files

If you want to display the contents of a file, use the TYPE command. To display the contents of a file, enter the following command format:

TYPE file name **<RETURN>**

where file name is the name of the file, including the file type, if necessary, and the work area specification, if the file does not reside in the Volume assigned to the current work area.

For example, to display the contents of the file MEMO.TXT which is located in the Volume assigned to you L: work area, enter

TYPE L:MEMO.TXT <RETURN>

The contents of the file will display and scroll up the screen very quickly. To control the display, type **<CTRL>-S** to stop the display. Press **<CTRL>-S** again to restart the display.

NOTE

If you try to display a binary file (a program or command file, for example), an unitelligible array of control characters will display on your screen, and may continue for a long period of time. To stop the display, press the **<BREAK>** key.

Such a display of control characters may leave your temrinal in an unknown state. To return to normal display mode, turn the temrinal's power off, then on.

10.4 Erasing Files

When you are finished with a file, and have no need to use it in the future, you will want to erase it to make the disk space available for yourself and for other users. To erase a file, use the ERA command in the following format:

ERA file name <RETURN>

where file name is the name of the file, including the file type, if required, and the work area specification, if the file is not in the Volume assigned to your current work area.

For example, to erase the file CHAPTER1.DOC which resides in the Volume assigned to your G: work area, enter

ERA G:CHAPTER1.DOC <RETURN>

When the n/STAR prompt returns, the file is erased.

Use caution when erasing files. Once a file is erase, it is gone. You do not have a second chance to restore an erased file.

10.4.1 Using Wildcards when Erasing Files

You can use wildcards (explained in Chapter 4) when erasing files, if you wish. You must be even more careful when using wildcards, however, because the potential for accidentally erasing a file are increased. To erase all files with the file type BAK, for example, enter

ERA *.BAK <RETURN>

If you make a mistake, such as typing **ERA *,BAK**, the results may be disasterous. This mistake would cause ALL FILES WITHOUT A FILE TYPE TO BE ERASED! (It is equivalent to typing **ERA ***.) If you choose to erase all files in a Volume, type

ERA *.* <RETURN>

In this case only, n/STAR gives you a second chance to change your mind. The screen displays

```
~
|
|All (Y/N)?_
|_____________________________________________
```

If you are certain that you want to erase every file in the Volume, type **Y <RETURN>**. If you change your mind and want to give it some more thought, type **N <RETURN>**.

10.5 Summary

n/STAR uses standard CP/M commands to manipulate files. In this chapter, you learned how to copy, rename, display the contents of, and erase files using the CP/M commands PIP, REN, TYPE, and ERA.

The next chapter explains how to use diskettes under n/STAR.

Chapter 11. Using Diskettes Under n/STAR

This chapter explains how to use diskettes under the n/STAR operating system. Diskettes are used under n/STAR by accessing a work area to which is assigned a Volume which physically resides on the G, H, O, or P paritition of the hard disk. (There really is no G, H, O, or P partition on the hard disk; this scheme "fools" the system into accessing the diskette drive.)

11.1 8" Diskette Drive Operation

On systems with 8" diskette drives, the various physical Volume locations have the following meanings:

Partition	Meaning
G	Single-sided/single density (SS/SD) operation
H	Single-sided/double-density (SS/DD) operation
O	Double-sided/single-density (DS/SD) operation
P	Double-sided/double-density (DS/DD) operation

The diskette drive on your system must support the selected type of operation to use these formats. All systems support SS/SD and SS/DD formats. All Supermicro X-Series systems and the original DIRAC models support DS/SD and DS/DD formats.

In addition to the diskette drive supporting the selected format, the diskettes you use must be formatted for the format selected. See your system administrator for information on obtaining diskettes formatted as necessary.

You must then learn the name of the Volume which corresponds to the desired diskette format. For SS/SD operation, the standard Volume name is FLOPPY. For SS/DD operation, the standard Volume name is FLOPPY1D. There are no standard Volume names for DS/SD or DS/DD operation.

To use the diskette drive, assign the desired Volume to one of your work areas (we recommend that you use the P: work area for the diskette Volume).

11.2 5-1/4" Diskette Drive Operation

Systems with 5-1/4" diskette drives are always set for double-sided/double density (DS/DD) operation and use Volumes which physically reside on the G and H parititions. The standard Volume names supplied with your system are FLOPPY9S and FLOPPY8S. To use the diskette drive, assign the desired Volume to one of your work areas (we recommend that you use the P: work area for the diskette Volume.)

On systems with 5/1-4" diskette drives, the physical Volume locations have the following meanings:

Partition	Meaning
G	9 sectors-per-track
H	8 sectors-per-track

You must use correctly formatted diskettes in the diskette drive. See your system administrator for information on obtaining formatted diskettes.

11.3 Acquiring/Releasing the Diskette Drive

When you enter a command which accesses the diskette drive, you acquire the diskette drive and retain ownership of it until you enter a command to release it or until you log off.

To release diskette drive ownership without logging off, first remove your diskette, then type

<CTRL>-C

Also, when you change diskettes, the computer does not automatically sense the change. If you perform a directory listing of a diskette after changing from another diskette, you will find that the directory listing has not changed. To inform the system that you have changed diskettes, enter

<CTRL>-C

If you try to use the diskette drive after someone else has used it and not released it, the following message will display:

```
|
|Bdos Error on P:  Drive In Use
|Function 17 File: ????????.???
|_____________________________________________
```

This error message means that another user is using or has acquired and forgotten to release the diskette drive. To determine which user "owns" the diskette drive, type the following command:

WHO <RETURN>

Your screen will display a list of all Application Processors, with information such as who is logged on and who is using the system printer and diskette drive. Part of this display might look like this:

```
~
|
|Unit  Type   Logged                  Device  DUnit
| 222  AP     DESPOOL (DOT)
| 226  AP     LOGON
| 238  AP     LOGON SUSAN
| 240  AP     LOGON PHILIP
| 244  AP     LOGON
| 245  AP      LOGON FRED             FLOPPY  255
| 255  FP     LOGON
|_____________________________________________________
```

This command is explained in detail in Section 17.2. For purposes of this explanation, however, the owner of the diskette drive is someone whose User ID is FRED and whose terminal is connected to an Application Processor with an address of 245 (each Application Processor has a unique address). Note that the entry is indented, which makes it easier to locate.

You must now ask Fred to release the diskette drive by typing (on his terminal) **<CTRL>-C** or by having him log off.

As soon as he has released the diskette drive, any user can acquire it by entering a command which access the diskette drive.

11.4 Copying Files to and from a Diskette

Copying files to a diskette is similar to copying files to a Volume on the hard disk -- you use the PIP command.

First, make sure your diskette is formatted (you can purchase pre-foratted diskettes or you can have your system administrator format diskettes using a Diangostic Mode command.

If you are going to copy files to a diskette, make sure that the diskette is write-enabled. (On 8" diskettes, cover the write-protect notch with a write-enable tab; on 5-1/4" diskettes remove the write-protect tab from the write-enable notch.)

To copy a file to a diskette, specify the work area to which the diskette Volume is assigned as part of the destination file name. The command works identically to the copy command described in Section 10.1. For example, let's assume you want to copy the file MEMOCOST.TXT from the Volume assigned to your A: work area to the diskette. We assume throughout this manual that your diskette volume (usually FLOPPY) is assigned to your P: work area. To accomplish this copy operation, enter the following command:

```
PIP P:=A:MEMOCOST.TXT[OVR] <RETURN>
```

After you press <RETURN>, you should hear the diskette drive operate, and its indicator should blink on and off as the file is copied. (Copying to a diskette will take longer than copying the same file to the hard disk, since the diskette drive operates about 10 times slower than the hard disk.

To copy a file from a diskette, you simply reverse the destination and source positions. For example, to copy the file from our previous example from the diskette to the Volume assigned to your A: work area, type

```
PIP A:=P:MEMOCOST.TXT[OVR] <RETURN>
```

The PIP command operates in the same manner with diskettes as it does with the hard disk. This means that you can make copies of files on the diskette, and you can specify wildcards during the copy operations.

One major difference between diskettes and hard disks is the diskette's limited capacity. Typically, 8" diskettes can hold 241 kilobytes, 496 kilobytes, 482 kilobytes, or 992 kilobytes (for SS/SD, SS/DD, DS/SD, and DS/DD operation, respectively. 5-1/4" diskettes can hold 327 kilobytes in DS/DD operation.

When copying files to a diskette, you should keep this limited capacity in mind. If you give a command to copy a file to a diskette which will exceed the capacity of the diskette, the following error message displays:

```
~
|
|DISK WRITE ERROR: =file name[options]
|_____________________________________________
```

The copy operation stops at the point when the diskette became full, and the file file name.$$$ is left on the diskette. The $$$ file type indicates that the file was left open (not closed). You should erase this file, as it is not an accurate representation of the file you intended to copy.

You can find out how much space a file will occupy on the diskette by entering the following command:

D file name <RETURN>

You can determine how much space remains on the diskette by entering the following command:

STAT P: <RETURN>

11.5 Renaming Files on a Diskette

To rename files on a diskette, insert the diskette (make sure it is write-enabled). Then type the REN command as follows:

REN P:newfile=oldfile

where

newfile is the name the you want to give to the file

oldfile is the name currently assigned to the file

This operation is identical to the rename operation described in Section 10.2.

11.6 Erasing Files from a Diskette

To erase files on a diskette, insert the diskette (make sure it is write-enabled). Then type the ERA command, specifying the work area to which the diskette Volume is assigned as part of the file name.

For example, to erase the file WHATSUP.DOC from the diskette, you would enter

ERA P:WHATSUP.DOC <RETURN>

Often, you will want to erase all files from a diskette (after copying, to make space available for copying more files). A diskette is not like an audio tape -- you do not "write over" the information already on the diskette (unless the file you are copying has the same name as a file already on the diskette). Instead, each separate file requires enough free space to hold the entire file.

To erase all files, enter

ERA P:*.* <RETURN>

When asked to confirm that you want to erase all files, enter **Y <RETURN>**.

Erasing files from a diskette is essentially the same as the normal erase operation explained in Section 10.4.

11.7 Summary

Most operations involving data storage on your computer are handled by commands which access the hard disk. When you want to use the diskette drive, however, you must determine the name of a Volume which resides in one of the reserved diskette partitions (G, H, O, or P). You must assign this Volume to one of your work areas (we suggest P:), then you can use the standard n/STAR commands DIR, D, STAT, PIP, ERA, REN, TYPE, or any others to access files on the diskette.

If your operations include writing to the diskette, the diskette must be write-enabled. If someone else has acquired the diskette drive and forgotten to release it, you must determine who used it last by enter the **WHO** command, then ask this person to release it by entering **<CTRL>-C** or by logging off.

Using diskette may sound somewhat awkward, but you will probably only be using diskette occasionally, so the inconvenience should be minor.

The next chapter explains how to print under n/STAR.

Chapter 12. How to Print Under n/STAR

The way you print under n/STAR depends upon the type of printer you are using: local, system, or despooling. This chapter explains how to print using these types of printers, and gives some additional information on controlling the print queue for despooling printers.

12.1 Printing on a Local Printer

To print on a local printer (a printer connected to the printer connector of the same Application Processor as your terminal), you must first set your User Profile to LST:=LOCAL using the ASSIGN command as follows:

ASSIGN LST:=LOCAL <RETURN>

Then, whenever you give a command to print from your application program (word processor, electronic spreadsheet program, or whatever), the printer will immediately begin to print. Usually, you cannot use your terminal for any other purpose until the job has finished printing; however, some word processing programs let you edit one file while printing another.

Some application programs have commands which let you pause the printer or abandon the job which is printing. If you enter such a command, the printer will usually continue to print for several lines. This is because many printers have their own memory which holds several lines of text waiting to be printed. Your cancel request always ends up at the end of this text buffer.

In addition to printing from your application program, you can print files directly from n/STAR using the LIST command. To do so, enter

LIST file name <RETURN>

The contents of the file will begin printing immediately, but may not look very good on paper, since the LIST command performs no print formatting. All commands embedded in the file to cause such enhancements such as bold, underline, and page breaks will either be ignored or interpreted differently than they were intended. You should use the LIST command to print only unformatted files such as program source files. The n/STAR prompt will return when the printing has completed.

12.2 Printing on a System Printer

Printing on a system printer (a printer connected to the File Processor rear panel PRINTER connector) is quite similar to printing on a local printer. However, there are some important differences.

To print on a system printer, you must first set your User Profile to LST:=SYSTEN using the ASSIGN command as follows:

ASSIGN LST:=SYSTEM <RETURN>

When you or your application program instructs the system printer to print, you acquire ownership of the printer. When you are finished printing, you must enter a command to release the printer or log off, so that other users may use the printer as necessary.

Your n/STAR prompt reminds you that you have ownership of the system printer. It looks like this:

```
~
|
|(system printer attached)
|A>
|_____________________________________________________
```

To release the system printer, either log off or enter the following command:

<CTRL>-Q

Once you release the system printer, other users can use it to print their files.

If you instruct n/STAR to print on the system printer when someone has already acquired it, the following message will display:

```
~
|
|Bdos Error: System Printer In Use
|_____________________________________________________
```

This error message will usually dump you out of your application program and return you to the n/STAR prompt.

To find out who has ownership of the system printer, use the WHO command as follows:

```
WHO <RETURN>
```

Your screen will display a list of all Application Processors, with information such as who is logged on and who is using the system printer and diskette drive. Part of this display might look like this:

```
~
|
|Unit  Type   Logged                Device  DUnit
| 222  AP     DESPOOL (DOT)
| 226  AP     LOGON
| 238  AP     LOGON SUSAN
| 240  AP     LOGON PHILIP
| 244  AP     LOGON
| 245  AP      LOGON FRED           PRINTER 255
| 255  FP     LOGON
|_____________________________________________________
```

This command is explained in detail in Section 17.2. For purposes of this explanation, however, the owner of the system printer is someone whose User ID is FRED and whose terminal is connected to an Application Processor with an address of 245 (each Application Processor has a unique address). Note that the entry is indented, which makes it easier to locate.

You must now ask Fred to release the system printer. He does so by typing (on his terminal) **<CTRL>-C** or by logging off.

As soon as he has released the system printer, any user can acquire it by entering a print command.

You can also use the system printer from n/STAR (rather than from an application program) by entering the following command:

LIST *file name* **<RETURN>**

Use this method only to print unformatted files, since the LIST command does no formatting.

12.3 Printing on Despooling Printers

A despooling printer is a printer which is connected to a dedicated Application Processor which has been configured for despooling. Printing on a despooling printer usually consists of two steps: spooling the file to be printed, then queuing the spooled file for despooling. Despooling takes place automatically when the print job reaches the head of the queue.

During despooling, a number of users share one or several despooling printers by using the print queue. The print queue is a waiting line of printing requests. The purpose of the queue is to maintain an orderly procession of files waiting to be printed. Each job enters the queue at the bottom, then moves up through the queue as previous jobs are printed. When the job reaches the top of the queue, it is despooled and printed automatically.

Your system may have several despooling printers, each with their own name. For example, a dot matix printer may have the name MATRIX or DOT, while a letter-quality printer may have the name LQP or CP. If your system has several despooling printers of the same type, they may all have the same name. For example, if your system has three letter-quality printers, they may all have the name LQP. You have no control over which of these printers with the same names n/STAR will use when you request that a job be printed. Which ever printer is available when your request reaches the top of the queue will be used.

To use a despooling printer, you must use the ASSIGN command to set your User Profile to LST:=SPOOL queue name as follows:

ASSIGN LST:=SPOOL queue name <RETURN>

where queue name is the name assigned to the print queue for the type of printer you want to use. See your system administrator to learn the names of the various despooling printers on your system.

Once you have assigned a despooling printer, you can proceed to use your application program to print a file in the normal manner. However, while your program indicates it is printing, it is actually creating a special file on the hard disk called a spool file. This file is always created in the Volume assigned to your A: work area, no matter which work area you are using when you give the print command. This file has the name $nnSPOOL.$$$, where nn is a hexadecimal number unique to your Application Processor.

When your application program indicates that it is finished printing, the spool file just created is ready to be queued. However, if you or your program issues another print command, the additional print job is appended to the end of the same spool file. A separate spool file is not created for each job.

When you are ready to place the spool file into the print queue, you can do any one of the following:

1. Type **LIST <RETURN>** (assuming that you want to place the job into the queue for the printer specified in your User Profile LST:= assignment).

2. Type **LIST SPOOL** queue name **<RETURN>** (where queue name is the name of any print queue, whether defined or not).

3. Exit from your application program (a warmstart is caused when you exit from a program, and a warmstart automatically queues any existing spool files). A warmstart also occurs when you press **<CTRL>-C**.

4. Log on (a coldstart is caused when you log on, and a coldstart automatically queues any existing spool files). A coldstart also occurs when you press **<BREAK>**, or when you otherwise reset your Application Processor.

NOTE

If you specify a queue name (either in the LIST command or in your User Profile) which does not exist, the job is placed in the queue anyway. It remains in the queue until deleted, or until your system administrator configures a despooling printer using the queue name specified, at which time the file will print.

When the job is placed into the print queue, n/STAR changes its name. This differentiates jobs waiting to be placed in the queue from jobs already in the queue. The name of jobs in the print queue have the following form:

volume name:nnxxxxx.SPL

where

volume name is the name of the Volume assigned to your A: work area.

nn is the unique number associated with your Application Processor, and is the same number used in the pre-queued spool file name.

xxxxx is a sequential number indicating which of possibly several spool files is queued. (If you spool additional jobs after queuing a job before the job is printed, the additional jobs are given sequential numbers when they are placed into the print queue.)

After the renamed spool file is printed, it is automatically deleted from your A: work area directory.

Once you have spooled and queued your print job, your Application Processor is free to perform other tasks (it takes much less time to spool a print job than to actually print it).

12.3.1 Printing Multiple Copies

If you want to print more than one copy of a file, you can do so by spooling it the desired number of times before listing, or you can specify a number of copies in the LIST command. To do this, use the following format:

LIST SPOOL DOT $n <RETURN>

where n is the desired number of copies.

For example, to print four copies of your spool file, type:

LIST SPOOL DOT $4 <RETURN>

This method of printing multiple copies actually creates a queue entry for each copy specified. This means that if you specify four copies of a file, there will be four jobs placed in the print queue to be printed.

12.3.2 Printing Spool Files on a Local or System Printer

You can print a spool file on either a Local or System Printer by entering the following command:

LIST SPOOL LOCAL <RETURN>

or

LIST SPOOL SYSTEM <RETURN>

In either case, your Application Processor will "hang" until the job has finished printing, becuase the job is actually being despooled through your Appication Processor.

Specifying any name other than SYSTEM or LOCAL implies a despooling printer. Specifying an undefined despooling printer causes the spool file to wait in the queue until your system administrator configures a printer of the specified name, or until you cancel the print job.

12.3.3 Using Despooling Printers without Spooling

You can print unformatted n/STAR files (program listings, and other files which need no formatting) by using the LIST command and specifying the desired file, as follows:

LIST file name queue name <RETURN>

In this case, the specified file is placed directly into the print queue; no renaming takes place, and the file is not automatically deleted when it has finished printing, as this would ordinarily not be desireable.

queue name can also be LOCAL or SYSTEM, in which case the file is immediately printed on the specified device.

12.3.4 Queuing a Job Spooled from Another Terminal

The act of placing a print job in the queue, changing its name, and deleting it are only accomplished automatically if you are performing all operations from the same terminal (which is the reason for the unique number associated with spool file names).

If you need to spool a file form one terminal, and place it into the print queue from another terminal, log onto the other terminal, then enter the entire file name to be queued. For example, to place the file A:2CSPOOL.$$$ into the MATRIX print queue, you must enter

LIST A:2CSPOOL.$$$ MATRIX <RETURN>

12.4 Controlling the Print Queue

If you use despooling printers, there will be times when you begin to print a long file and the paper jams, or the printer ribbon breaks, or some other minor catastrophe occurs. There may be other times when there are many long jobs in the print queue waiting to be printed, but you have an urgent need to get your file printed as soon as possible. n/STAR provides a series of commands to control the print queue to solve these and other problems.

The print queue is controlled using the QMAINT command. To use QMAINT, enter

```
QMAINT <RETURN>
```

The resulting display depends upon the print queue activity. If there are no jobs in the print queue for any despooling printer, your screen will display

```
|                        n/STAR Queue Maintenance Program
|
|      ** NO queue activity **
|
|enter queue name or command: (_                )
|
|
|
~
```

On the other hand, if there are jobs in the print queue for any printer, your screen will display those queue names for which there are active or pending jobs. A typical display might look like this:

```
|                        n/STAR Queue Maintenance Program
|
|Queue Activity Report
|queue: DOT        active: 1     pending: 2
|queue: CP         active: 1     pending: 12
|queue: MATRIX     active: 2     pending: 0
|
|enter queue name or command: (_                )
~
```

You can enter a series of commands to control the print queue from this screen. These commands are covered in the remainder of this section. You can also enter **? <RETURN>** to obtain a command summary help screen. Use this feature to refresh your memory after you have read this section.

12.4.1 Canceling a Job in the Print Queue

One of the most common things you will want to do when printing is to cancel an active or pending print job. Canceling a job will remove it from the print queue and will cause the next job in the print queue to begin printing. To cancel a job, follow these steps:

1. Type **QMAINT <RETURN>** to display the queue maintenance screen shown above.

2. Enter the queue name in which the job was placed, followed by <RETURN>. For example, if your job is printing or waiting to be printed on the CP printer, enter

   CP <RETURN>

   Your screen will display details of all jobs printing and waiting to be printed in the specified queue. A typical display looks like this:

```
|                        n/STAR Queue Maintenance Program
|
|active requests
|   a1) unit:226/01  FRED:$1C$00001.SPL
|
|pending requests
|   p1) SUSAN:TEST1.FIL                  p2) SUSAN:$2F$00000.SPL
|   p3) SCRATCH:FILE32.999
|
|NOTE: position) <volume name>:<file name>.<file type>
|
|enter command: (_                                   )
|
~
```

In this display, unit:226/01 is the Application Processor address and port to which the despooling printer is connected.

3. You may cancel jobs in one of two ways:

   a. Type **CANCEL position <RETURN>**, where position is the position indicator assigned to the job (a1, p1, p2, etc.). n/STAR will then display the corresponding file name and ask you to verify that you want to cancel this job. For example, if you enter **CANCEL P2 <RETURN>**, your screen would display:

      SUSAN:$2F$00000.SPL , cancel?(Y/N): _

      If you really want to cancel this job, enter **Y**. If not, enter **N**.

   b. Type CANCEL **volume name:file name <RETURN>**, supplying the complete name of the file as displayed in the queue maintenance screen. In this case, you are not asked to verify your entry.

If the job you canceled was printing, it will continue to print for several lines before stopping, while both the Application Processor memory and the printer's internal memory contents are printed. If the canceled job was pending, it is removed instantly from the print queue.

4. If the job you canceled was printing, wait for the printer to stop, then realign the top of form. (The next job will not begin printing until you exit from the queue maintenance screen -- it is temporarily on hold).

5. Press **<RETURN>** without entering a command to return to the queue activity display. (This also releases the print queue, so that the next job can print.

6. If you want to reprint the job, you must again spool it, then place the new spool file into the queue.

12.4.2 Relocating a Job in the Print Queue

There are several commands for moving jobs up and down in the print queue. All commands have the same format and are entered after obtaining the queue maintenance screen for the desired print queue. each of the commands can be entered in two ways: by entering the position indicator (p1, p3, etc.), or by entering the complete job name (volume name:file name). If you enter a position indicator, n/STAR displays the complete file name and asks you to confirm your entry. If you instead enter the complete job name, you are not asked to confirm your entry.

The commands to move jobs in the print queue are TOP, BOTTOM, UP, and DOWN.

To move a job to the top of the print queue (so that it becomes the first pending job), enter

TOP position <RETURN>

and confirm your entry, or enter

TOP volume name:file name <RETURN>

To move a job to the bottom of the print queue (so that it becomes the last job to be printed), enter

BOTTOM position <RETURN>

and confirm your entry, or enter

BOTTOM volume name:file name <RETURN>

To move a job up through the print queue a specified number of positions, enter

UP position count<RETURN>

and confirm your entry, or enter

UP volume name:file name count <RETURN>

where count is the number of positions to move the job. If count is omitted, the job is moved up one position.

To move a job down through the print queue a specified number of positions, enter

DOWN position count<RETURN>

and confirm your entry, or enter

DOWN volume name:file name count <RETURN>

where count is the number of positions to move the job. If count is omitted, the job is moved down one position.

12.4.3 Placing a Print Queue on Hold

You can put a hold condition on a print queue or on a specific printer using QMAINT commands. If a print queue or printer is in the hold condition, you can enter a command to release it.

You may want to put a queue or printer on hold if the printer is broken and won't be fixed for some time, or if there is some other reason to temporarily suspend printing for a period of time.

There are two ways to put the print queue on hold:

1. Enter **QMAINT <RETURN>** to display the Queue Activity Report screen, then enter **HOLD queue name <RETURN>**, where queue name is the name of the queue you want to place on hold.

2. If there are jobs in the desired print queue, enter **QMAINT <RETURN>**, then enter **queue name** of the desired print queue, then type **HOLD <RETURN>**.

In either case, the screen will indicate that the specified queue is in the hold condition:

```
|                          n/STAR Queue Maintenance Program
|
|Queue Activity Report
|queue: DOT        active: 1     pending: 2
|queue: CP         active: 1     pending: 12  ***HOLD CONDITION ***
|queue: MATRIX     active: 2     pending: 0
|
|enter queue name or command: (_                )
|
~
```

There are also two ways to release the hold on the print queue:

1. Enter **QMAINT <RETURN>** to display the Queue Activity Report screen, then enter **RELEASE queue name <RETURN>**, where queue name is the name of the queue you want to release.

2. If there are jobs in the desired print queue, enter **QMAINT <RETURN>**, then enter **queue name** of the desired print queue, then type **RELEASE <RETURN>**.

With either method, the print queue will be released immediately, but remember that when you have a specific queue maintenance screen displays, that queue is temporarily on hold until you return to the queue activity report screen.

You can also place a specific printer on hold by specifying the address and I/O port of the Application Processor to which the printer is connected. The method for doing this is the same when either the queue activity screen or the queue maintenance screen is displayed.

To place a printer on hold, you first need to know its Application Processor address and I/O port number. These can be determined by examining the print queue while jobs are in the queue. The active job indicates the address and port number as the unit number:

```
|                          n/STAR Queue Maintenance Program
|
|active requests
|   a1) unit:226/01  FRED:$1C$00001.SPL
|
|pending requests
|   p1) SCRATCH:FILE32.999
|
|NOTE: position) <volume name>:<file name>.<file type>
|
|enter command: (_                          )
|
~
```

Once you know the desired address and I/O port number, you can place the printer on hold by entering

HOLD address/port number <RETURN>

where:

address — is the address of the despooling Application Processor to which the printer is connected.

port number — is the number of the I/O port on the Application Processor to which the terminal is connected, where

01 is the TERMINAL port

02 is the PRINTER port

A printer can be connected to each port of a despooling Application Processor.

To release a printer from the hold condition, use the same command format, substituting the command RELEASE for the command HOLD:

RELEASE address/port number <RETURN>

12.5 Printing Screen Images

You can, if desired, print a copy of everything that appears on the screen of your terminal, including everything you type in addition to everything the system displays.

To do this, enter

<CTRL>-P

This turns on print echo mode. Each time the n/STAR prompt is displayed, the words "Ctrl P Active" are also displayed, to remind you that you are in print echo mode. To deactivate print echo mode, press **<CTRL>-P** again.

Note that if you are using a local printer, printing will occur as you type and as the system displays information. If you are using a system priner, and the syystem printer is available, it is automatically acquired and then the printer will print while you type. If you are using a despooling printer, turning on print echo mode will create a spool file, which you must subsequently print by placing the spool file into the print queue using one of the methods covered in Section 12.3.

12.6 Summary

n/STAR supports three types of printers: local printers, a system printer, and despooling printers. This chapter explained how to use each type of printer, in addition to providing important insight on how to manipulate the print queue for despooling printers.

The best way to learn about printing is to try it and see what happens. The worst thing that can happen is that if you make a mistake, another user's print job might be canceled. This is not disasterous, however, because the job can easily be restarted. If you have any reservations about playing with the system in this way, wait until the other users go home, and then try printing several different jobs. If your system has despooling printers, try queuing several short jobs, then canceling, moving, and placing the print queue on hold. With a little practice, you will become an expert at printing on the Molecular computer.

When you are ready to continue, the next chapter discusses how to perform a sequential series of commands using the SUBMIT function of n/STAR.

Chapter 13. Performing a Sequential Series of Commands

n/STAR supports the CP/M command SUBMIT, which is used to execute a series of commands in sequential order.

The SUBMIT command works by reading an n/STAR file which contains the commands to be executed. The file can be named as desired, but must have the file type SUB.

When you are ready to execute the series of commands stored in the n/STAR file, enter

SUBMIT file name <RETURN>

You do not need to enter the file type when specifying the file name.

The CP/M Operating System Manual provides detailed information on setting up the submit file, and information on how to pass parameters to the commands within the file during execution of the commands. Refer to this manual for more information.

When n/STAR executes the submit file, it creates another file which actually gets executed. To support the SUBMIT command in n/STAR's multiuser environment, this file is named $nn.SUB, where nn is a unique hexadecimal number associated with the Application Processor address. (In CP/M, the file created by the system is named $$$.SUB.) This procedure is performed within n/STAR and is transparent to the user and to application programs using the SUBMIT command.

Chapter 14. Acquiring Another Application Processor

n/STAR provides a command for using "system resource" Application Processors to perform background processing. This command is TLINK. This chapter explains how to acquire and link to a standard Application Processor (an 8-bit, Z80 Application Processor). This feature is particularly useful when using an Application Processor as a mail server in conjunction with Molcular's m/MAILNET Networking Electronic Mail System.

Your system administrator must configure Application Processors to allow them to be acquired by the TLINK command. This procedure is explained in the n/STAR System Administrator's Guide.

14.1 Acquiring an Application Processor with No Name

To acquire and Application Processor which was not given a specific name by your system administrator, follow these steps:

1. Enter

   TLINK <RETURN>

   The TLINK selection menu appears:

```
Terminal Communication Program

        Enter Function Code

A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor

                hit "RETURN" to exit (_)
```

2. Select **B** to acquire an "n/STAR80" Application Processor (the other selection will be covered in the next chapter). The screen displays "Initializing...", then

```
|Linked to NSTAR80, nnn.  Use ^] to delink.
|
|
|A>_
|
~
```

where nnn is the address of the Application Processor to which you are linked.

When the A> prompt appears, you are running as though you are logged on under the same user name as you originally logged on under. Commands you type at this point are interpreted by the linked Application Processor.

3. Type **LOGON user name;password <RETURN>** to log on under any desired user name, where user name is any desired User ID, and password is the password required to log on under that User ID.

4. Start your background program running.

5. Press **<CTRL>-]** to "delink" and return to the TLINK selection menu. This menu now looks like this:

```
|                    Terminal Communication Program
|
|                         Enter Function Code
|
|               A) Acquire available n/STAR86 processor
|               B) Acquire available n/STAR80 processor
|
|               1) Resume communication with NSTAR80,nnn
|               2) Release NSTAR80,nnn
|               3) Reset NSTAR80,nnn
|
|               4) Select NSTAR80,nnn
|
|                                hit "RETURN" to exit (_)
```

6. Press **2** to exit from this menu display and return to your original n/STAR prompt. The process you initiated on the acquired Application Processor will continue to run until it is finished, until it is interrupted by another command, or until it tries to output more than 128 characters. (Programs which perform and require input/output operations are not supported by TLINK; program execution will suspend after the programs has output 128 characters until you again link to the Application Processor and let character display continue.)

When you are ready to regain control of the acquired Application Processor, follow these steps:

1. Type **TLINK <RETURN>**. You screen will display

```
Terminal Communication Program

Enter Function Code

A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor

4) Select NSTAR80,nnn

hit "RETURN" to exit (_)
```

2. Enter **4** (or the correct number to select the desired processor, if you have acquired more than one Application Processor). The screen again displays

```
                    Terminal Communication Program

                          Enter Function Code

              A) Acquire available n/STAR86 processor
              B) Acquire available n/STAR80 processor

              1) Resume communication with NSTAR80,nnn
              2) Release NSTAR80,nnn
              3) Reset NSTAR80,nnn

              4) Select NSTAR80,nnn

                                hit "RETURN" to exit (_)
```

From this screen, you can elect to resume communication with the acquired processor ("relink"), release it again (and return to your original processor), or reset it (which will stop whatever process is running and clear the Application Processors memory). Resetting is equivalent to pressing **<BREAK>** on your terminal's keyboard, except that pressing **<BREAK>** in this instance would reset the Application Processor connected to your terminal, not the acquired Application Processor.

With these simple menu selections, you have total control over the acquired Application Processor.

14.2 Acquiring an Application Processor with a Name

To acquire and Application Processor which was given a specific name by your system administrator, follow these steps:

1. Enter

   TLINK ap name **<RETURN>**

   where ap name is the name given to the "linkable" Application Processor by your system administrator. For example, if the Application Processor name is MAILBOX, you would enter:

   TLINK MAILBOX <RETURN>

   You are taken directly to the A> prompt of the acquired processor:

```
|Linked to MAILBOX, nnn.  Use ^] to delink.
|
|
|A>_
|
~
```

   where nnn is the address of the Application Processor to which you are linked. Commands you type at this point are interpreted by the linked Application Processor.

2. When the A> prompt appears, you may be running as though you are logged on under the same user name as you originally logged on under, or you may not be logged on at all (depending upon how your system administrator set up the Application Processor). To determine whether you are logged onto n/STAR, type **DIR <RETURN>**. If a directory lising of the Volume assigned to your A: work area displays, you are logged onto n/STAR. If a directory listing of the SYSTEM Volume displays, you are in Superuser Mode and are not afforded the protection of the n/STAR security system.

3. If the Application Processor comes up on Superuser mode, you should log on immediately. To do so, type

   LOGON user name;password <RETURN>

   where user name is any valid User ID, and password is the optional password for that User ID, if required. You can also log on as another user (if desired) if the Application Processor comes up already logged on.

4. Start your background program running.

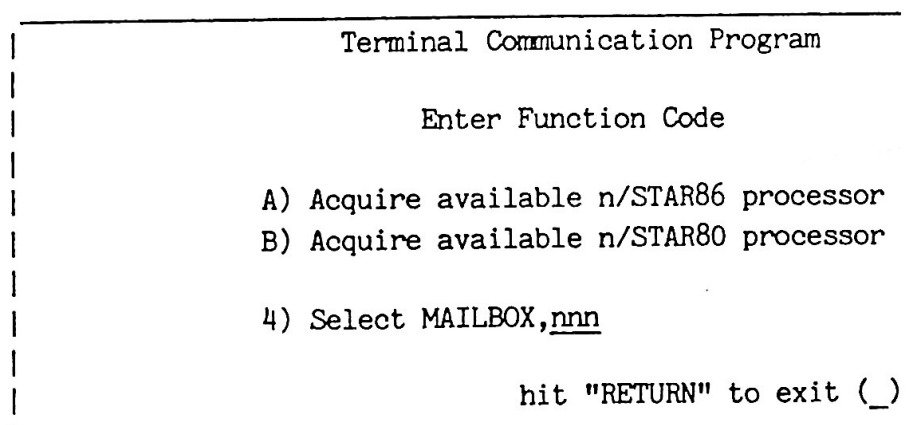
5. Press **<CTRL>-]** to "delink" and return to the TLINK selection menu. This menu now looks like this:

```
                    Terminal Communication Program

                          Enter Function Code

                A) Acquire available n/STAR86 processor
                B) Acquire available n/STAR80 processor

                1) Resume communication with MAILBOX,nnn
                2) Release MAILBOX,nnn
                3) Reset MAILBOX,nnn

                4) Select MAILBOX,nnn

                                hit "RETURN" to exit (_)
```

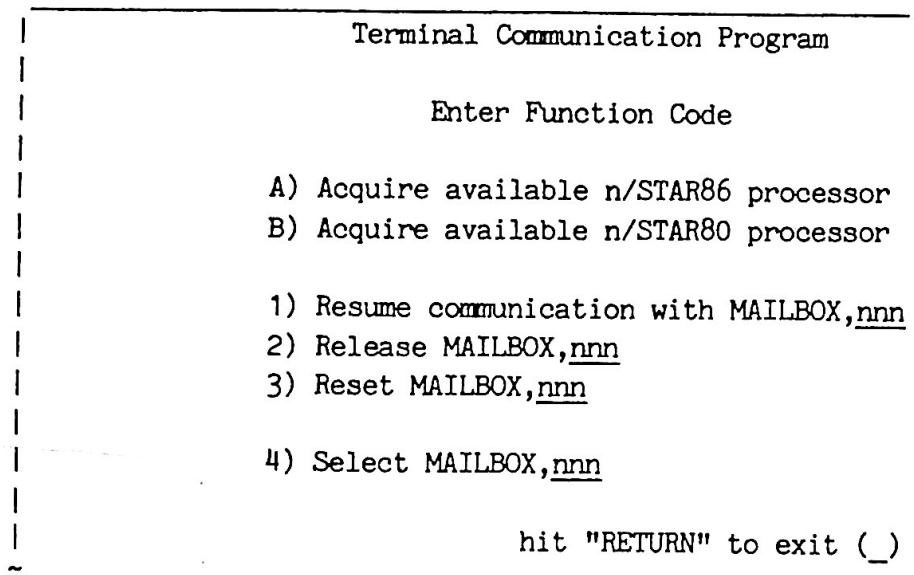
6. Press **2** to exit from this menu display and return to your original n/STAR prompt. The process you initiated on the acquired Application Processor will continue to run until it is finished, until it is interrupted by another command, or until it tries to output more than 128 characters. (Programs which perform and require input/output operations are not supported by TLINK; program execution will suspend after the programs has output 128 characters until you again link to the Application Processor and let character display continue.)

When you are ready to regain control of the acquired Application Processor, follow these steps:

1. Type **TLINK <RETURN>**. You screen will display


Terminal Communication Program
Enter Function Code
A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor
4) Select MAILBOX,nnn
hit "RETURN" to exit (_)

2. Enter **4** (or the correct number to select the desired processor, if you have acquired more than one Application Processor). The screen again displays



From this screen, you can elect to resume communication with the acquired processor ("relink"), release it again (and return to your original processor), or reset it (which will stop whatever process is running and clear the Application Processors memory). Resetting is equivalent to pressing **<BREAK>** on your terminal's keyboard, except that pressing **<BREAK>** in this instance would reset the Application Processor connected to your terminal, not the acquired Application Processor.

With these simple menu selections, you have total control over the acquired Application Processor.

14.3 Summary

This chapter explained how to use the TLINK command to acquire, link to, and control system resource Application Processors. Your system may have such Application Processors set up without a name, in which case the default name NSTAR80 is used, or they may be given a name, perhaps to indicate their intended use.

The next chapter explains how to use the same TLINK command to control optional 16-bit Application Processors.

Chapter 15. Using 16-bit Application Processors

As an option, your computer may have "system resource" 16-bit Application Processors. These processors can be used to run 16-bit application software under n/STAR-86 (CP/M-86 compatible and included with your system) or MS-DOS (an extra-cost option).

16-bit Application Processors (also called Performance Accelerators) are system resources, having no input/ouput circuitry of their own. To use a 16-bit Application Processor, you use the command TLINK to acquire and link to the processor, which then uses your normal Application Processor for input and output processing. (Printing is accomplished via the LST: specification in your User Profile.)

15.1 Acquiring a 16-bit Application Processor

To acquire and link to a 16-bit Application Processor, type

TLINK <RETURN>

The screen displays

```
Terminal Communication Program

Enter Function Code

A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor

hit "RETURN" to exit (_)
```

2. Select **A** to acquire an "n/STAR86" Application Processor. The screen displays "Initializing...", then

```
|Linked to NSTAR86, nnn.  Use ^] to delink.
|
|
|A>_
|
~
```

where nnn is the address of the 16-bit Application Processor to which you are linked.

When the A> prompt appears, you are running as though you are logged on under the same user name as you originally logged on under. Commands you type at this point are interpreted by the linked Application Processor.

3. Enter commands as desired.

NOTE

Although n/STAR-86 lets you run CP/M-86 application software, Molecular does not include any of the CP/M-86 utilities with n/STAR. This means that to perform a directory listing, for example, you must "delink" and use standard n/STAR commands.

If you will be using 16-bit application software regularly, we recommend that you purchase CP/M-86 and copy its utiltity programs to your SYSTEM or USERSYS Volume.

15.2 Delinking from a 16-bit Application Processor

If you want to delink from a 16-bit Application Processor while retaining ownership, follow these steps:

1. Press **<CTRL>-]** to "delink" and return to the TLINK selection menu. This menu now looks like this:

```
Terminal Communication Program

Enter Function Code

A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor

1) Resume communication with NSTAR86,nnn
2) Release NSTAR86,nnn
3) Reset NSTAR86,nnn

4) Select NSTAR86,nnn

hit "RETURN" to exit (_)
```

2. Press **2** to exit from this menu display and return to your original n/STAR prompt. The process you initiated on the acquired Application Processor will continue to run until it is finished, until it is interrupted by another command, or until it tries to output more than 128 characters. (Programs which perform and require input/output operations are not supported by TLINK; program execution will suspend after the programs has output 128 characters until you again link to the Application Processor and let character display continue.)

15.3 Relinking to a 16-bit Application Processor

When you are ready to regain control of the acquired 16-bit Application Processor, follow these steps:

1. Type **TLINK <RETURN>**. You screen will display

```
Terminal Communication Program

Enter Function Code

A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor

4) Select NSTAR86,nnn

hit "RETURN" to exit (_)
```

2. Enter **4** (or the correct number to select the desired processor, if you have acquired more than one Application Processor). The screen again displays

```
Terminal Communication Program

Enter Function Code

A) Acquire available n/STAR86 processor
B) Acquire available n/STAR80 processor

1) Resume communication with NSTAR86,nnn
2) Release NSTAR86,nnn
3) Reset NSTAR86,nnn

4) Select NSTAR86,nnn

hit "RETURN" to exit (_)
```

From this screen, you can elect to resume communication with the acquired processor ("relink"), release it again (and return to your original processor), or reset it (which will stop whatever process is running and clear the Application Processors memory). Resetting is equivalent to pressing **<BREAK>** on your terminal's keyboard, except that pressing **<BREAK>** in this instance would reset the Application Processor connected to your terminal, not the acquired Application Processor.

NOTE

Resetting a 16-bit Application Processor takes several seconds, during which time it is unavailable for use. If you try to resume communication with an Application Processor after resetting it, and the reset cycle has not yet completed, the message "Device does not exist...Hit any key to continue" will display. Wait a few moments and try again.

With these simple menu selections, you have total control over the acquired 16-bit Application Processor.

15.4 Summary

Molecular's optional 16-bit Application Processors are supported by the TLINK command. This chapter explained how to acquire, link to, and control these 16-bit processors, which operate as system resources using your normal Application Processor for I/O operations.

The next chapter explains how to recover from certain system errors.

Chapter 16. Recovering from n/STAR Errors

There are several things you can do to lock yourself out of n/STAR. This chapter explains these problems and suggests some solutions.

16.1 No SYSTEM Volume

If your User Profile does not include the SYSTEM (or USERSYS) Volume, you will not be able to log off or perform other n/STAR functions (unless the specific commands you need have been copied into another Volume which is assigned to one of your work areas).

The command you need to fix this problem (ASSIGN) is located in the SYSTEM volume, which you cannot use because you do not have access to it.

The solution to this problem is to ask your system administrator to use the MAINT command to call up your User Profile and reassign the SYSTEM (or USERSYS) Volume.

16.2 No Volume Assigned to a Work Area

If no Volume (or a nonexistent Volume, or a Volume with an incorrect password specified) is assigned to one of your work areas, and you give the n/STAR command to switch to that work area, your screen will display

```
~
|
|Bdos Error On n: Select
|Function 14_
|_____________________________________________
```

where n is the letter of the work area you selected.

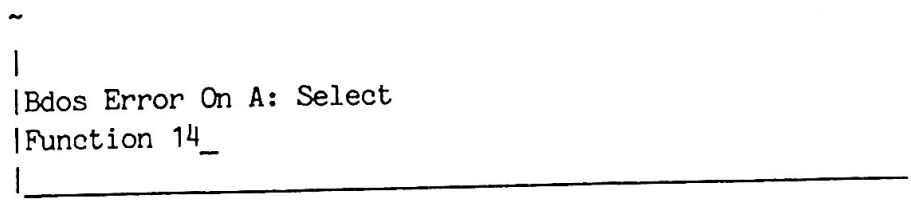
This is not really a problem, becuase n/STAR does not actually switch to the other work area -- you are left in the work area you were using prior to issuing the command.

However, if you are currently in the work area you are changing, and unassign its Volume, it is a slightly different problem. In this case, you are "trapped" in the work area when the prompt returns. The above message will display and you will not be able to perform any other function.

To exit from this trap, press the **<BREAK>** key (or turn your terminal off, then back on). This will reset your Application Processor and return you to your A: work area. Now, you can use the ASSIGN command to assign a valid Volume to the work area in question, if desired.

16.3 No Volume Assigned to Your A: Work Area

n/STAR has mechanisms to prevent you from unassigning a valid Volume from your A: work area. However, it may be possible to do this under certain circumstances. If you somehow unassign your A: Volume, you will get the following message when you log onto n/STAR:



Since you are in the "logon" work area, there is nothing you can do to reestablish a Volume for this work area. You must ask your system administrator to use the MAINT command to call up your User Profile and reassign a valid Volume to your A: work area.

A similar problem can more easily occur if you have an initial command which switches you to another work area when you log on. For example, if part of your initial command instructs n/STAR to switch to your G: work area, and no Volume is assigned, you will get the "Select" error message shown above and will be trapped in the G: work area, in the same manner as described above.

To solve this problem, you must ask your system administrator to use the MAINT command to call up your User Profile and either assign a valid Volume to your G: work area, or change your initial command.

16.4 Summary

This chapter covered a few of the more common errors which can occur when using n/STAR. More problems can occur, but are beyond the scope of this manual. For more error recovery information, refer to the n/STAR System Administrator's Guide

The next chapter covers several n/STAR commands which perform useful functions, but which do not fit neatly into any one category.

Chapter 17. Miscellaneous n/STAR Functions

This chapter describes the remainder of the n/STAR commands not discussed elsewhere in this part of the manual. These are all useful commands, but do not fit neatly into any one catagory of fucntionality.

17.1 Listing System Devices

n/STAR acquires and releases devices (system printer, diskette drive, and system resource Application Processors). n/STAR also creates, uses, and destroys MP/M queues (when a user is using MP/M application software). To list devices and MP/M queues for your system, use the n/STAR DEVICES command. Type

```
DEVICES <RETURN>
```

Your screen will display a list of system devices. Here is a typical list:

```
~
|
|  name      unit   type    flag    owner
|MAILBOX      212   TLink    X H       0
|NSTAR80      220   TLink    X       238
|NSTAR86      242   TLink    X         0
|PRINTER      255   device   XK      243
|FLOPPY       255   device   XK        0
|_____________________________________________
```

(((what does an MP/M queue entry look like?)))

where:

name is the name of the device or queue

unit is the unit address of the device

type is the access type of the device, where:

- **device** is a printer, diskette drive, or other device
- **TLink** indicates access is possible via TLINK command
- **queue** indicates this is an MP/M queue

flag are the access control parameters for the device, where

- **X** indicates exlusive use
- **K** indicates keep (cannot be deleted)
- **H** indicates hard acquire (retain device after a warmstart)

owner is the address of the Application Processor which currently has acquired the device

17.2 Finding Out Who is On your System

The n/STAR WHO command lists all Application Processors installed in the system by their address, and provides other useful information. To use the WHO command, type

```
WHO <RETURN>
```

Your screen will display a list of all Application Processors. A typical list might look like this:

```
~
|
|Unit  Type   Logged                        Device  DUnit
| 195  AP86
| 196  AP     LOGON
| 201  AP     LOGON GLEN
| 202  AP     LOGON SUSAN
| 205  AP     NEWCON
| 210  AP     NEWCON MAILBOX NORESET
| 211  AP     LOGON
| 215  AP      LOGON GARY                  FLOPPY    255
| 220  AP     LOGON
| 243  AP     DESPOOL (CP) ('SYSTEM 2 LP',0)
| 250  AP     LOGON
| 255  FP     LOGON
|_____________________________________________________
```

where:

Unit is the Application Processor address

Type is the type of processor, where:

AP is a standard (Z80) AP

AP86 is a 16-bit AP

FP is the system File Processor

Logged is the processor command line established by your system administrator, where:

LOGON indicates a processor which is available for logging on

LOGON user name indicates a processor which is current logged on by the user user name.

DESPOOL (param 1)(param 2)
indicates a dedicated despooling AP with its associated parameters (explained in the n/STAR System Administrator's Guide)

NEWCON indicates a system resource AP with the default name (NSTAR80)

NEWCON name indicates a system resource AP with a name assigned by the system administrator

17.3 Listing Volumes on Your System

There may be times when you need to know the name of Volumes on your system. n/STAR provides this capability using the VOLS command. (This command may not be available for general use on your system as it could compromise system security -- this decision is up to your system administrator).

To display a list of Volumes on your system, type

VOLS <RETURN>

The screen displays a list of volumes. A typical list might look like this:

```
                                                          V1.0
 Unit = FF
    |   A       B        C         D          E        F        G        H
----|-------------------------------------------------------------------------
 0  | SYSTEM  SUSAN    WILLARD   WORDPROC                      FLOPPY
 1  | USERSYS          JIM       SPREDSHT
 2  |                  MANAGER   DBASE
 3  | MAILBOX          ADMIN1    INDEX
 4  | MMAIL            ADMIN2    COMM
 5  |                  TOM2      MISC
 6  |                  FRED      MISC2
 7  | GUEST            SHARYN    MISC3
 8  |                            GAMES2
 9  |                            HOMEWORK
10  |                            CLIENTS
11  |                            PROCEDURE
12  |                            ENGINEER
13  | SCRATCH
14  | GAMES
15  | MAINT   TOM

Type cntl-C to exit, anything else to continue: _
```

The letters across the top of the display are the hard disk partitions, and the numbers down the side are CP/M User Numbers. At the intersection of a Partition and a User number is listed the name of the Volume assigned to that location.

The first screen of the display (shown above) may be only a paritial listing of the Volumes on the system. When you are ready to see the next screen of the display, press any character. The next display shows all the Volumes residing on Paritions I through P. (Remember that Partitions G, H, O, and P are reserved to be used to access the diskette drive -- they do not actually exist on the hard disk drive.

After displaying all Volumes assigned to all Partitions, pressing any character displays the first set of Partitions again, this time showing any multiple Volume assignments (multiple Volumes assigned to the same Parition/User Number location). New screens will continue to display with each press of any character until all Volumes are displayed. When you have displayed all Volumes on the system, pressing any character returns you to the n/STAR prompt.

17.4 Setting File Attributes

Earlier in this manual we mentioned the system attribute, and hinted at the fact that there are actually several attributes which may be set for any given file. This operation involves the SET command. To set a file attribute, type

SET file name $attribute <RETURN>

where attribute may be any one of the following:

SHR sets the share attribute, to enable file sharing

LCK resets the share attribute, to disable file sharing

PCL sets the partial-close attribute, to support file sharing for files which read and/or write records after closing files

NCL resets the partial-close attribute to normal-close attribute

R/O sets the read-only attribute, so that files may not be written to nor erased

R/W resets the read-only attribute to read/write

SYS sets the system attribute, which removes the file from the directory listing displayed by the DIR command, and allows the directory search feature to find the file.

DIR resets the system attribute, which restores the file to the directory listing displayed by the DIR command, and prevents the file from being found by the directory search feature.

ARC sets the archive attribute, which indicates that the file has been archived and need not be backed up again.

MOD resets the archive attribute to modified, which indicates that the file has been modified since the last backup was performed and should be backed up again.

17.5 Temporarily Changing Baud Rates

Baud rates are established by your system administrator when setting up the system, using software commands in the MAINT utility. If you need to temporarily change baud rates for a special purpose, and do not have access to the MAINT command, use the SETBAUD command. To use SETBAUD, type

SETBAUD <RETURN>

The screen displays

```
|                      n/STAR Baud Rate Selection Utility
|                     Ver 1.2                          4/1/81
|
|
|C = Console Port, P = Printer Port (_)
|
~
```

Enter the desired Application Processor port (**C** or **P**). The screen displays

```
|                      n/STAR Baud Rate Selection Utility
|                     Ver 1.2                          4/1/81
|
|
|C = Console Port, P = Printer Port (C)
|
|        A = 110              E = 2400
|        B = 150              F = 4800
|        C = 300              G = 9600
|        D = 1200             I = 19200
|
|Desired Baud Rate (_)
|
~
```

Enter the letter corresponding to the desired baud rate. If you selected the console port, the screen displays

```
~
|
|Change Terminal Baud Rate - Then Hit Return (_)
|
~
```

If this message displays, change the baud rate of whatever device is connected to the console port of the Application Processor now.

If you are changing the baud rate of the printer port, this message does not display. The screen then displays

```
~
|
|COMPLETE - hit "CTRL/S" to restart, "CTRL/C" if done (_)
|
~
```

If you made the desired selections, press **<CTRL>-C.** If you want to start over, press **<CTRL>-S.**

The baud rate will return to its original setting when you log off and log on again.

17.6 Summary

In addition to supporting all CP/M commands (except User Number), n/STAR provides several additional commands. This chapter explained several commands which have no related functions. These commands are used to list system devices, listing who is logged onto the system, listing volumes on your system, setting and resetting system attributes, and temporarily changing baud rates.

Appendix A. Manual Ordering Information

The following is a list of manuals with their associated part numbers. Use the manual description and part number when ordering.

Series 9 System Installation Manual	87100630
Supermicro Series Installation Manual	87100420
Supermicro X Series Installation Manual	87100430
Series 9 System Operator's Guide Supermicro X Series Operator's Guide	87100640
n/STAR User's Guide	87100650
n/STAR System Administrator's Guide	87100660
n/STAR Programmer's Guide	87100670
Tape Backup System User's Guide	87100680
CP/M Operating System Manual	87100100
ATOM Manual Set	98330011
ATOM Operations Manual	87100450
m/CALC Manual	87100470
m/WORD Manual	87100460
m/MAIL Manual	87100480
Molecular Model Interconnect Installation and User Manual (for 16X and 32X Computer Systems)	87100580
Menu Master User's Guide	87100270
Menu Master Reference Manual	87100260
Moleculcar MT-100 Video Display Terminal User Reference Manual	87100230

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